THE FORAGER'S GARDEN

Cultivating Wild Plants for Food & Medicine

VICKIE SHUFER
author of *The Everything Guide to Foraging*

150
Herbs, Greens, Flowers, Nuts & Berries

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VICKIE SHUFER

Skyhorse Publishing

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Disclaimer
The information provided in *The Forager's Garden* is for educational and inspirational purposes and to offer guidance in growing your own. Positive identification and the safety and usage of plants or mushrooms used lie with the reader.

Dedicated to my brother Greg, who shared my love of nature and the farm where I first got the taste of growing wild.

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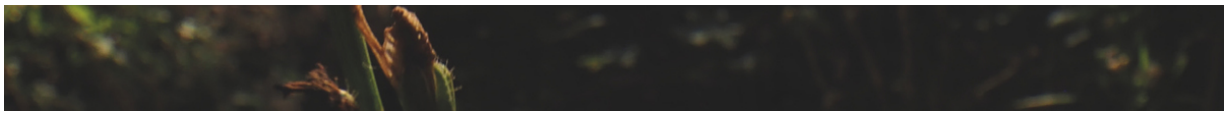
ACKNOWLEDGMENTS

My teachers have been many, beginning with the earth herself. Working the land began in my childhood with my father, grandfather, siblings, and other farmers. After that I learned from my teachers in undergraduate school, Dr. James Duke, who was my mentor until his passing in 2018, and the teachers at Maryland University of Integrative Health where I got my Master's degree. There have been numerous teachers, too many to name, who have crossed my path at some point or have attended a class, that have passed on information.



INTRODUCTION

Reasons for Growing a Forager's Garden

The Forager's Garden isn't about eliminating what isn't wild or not native. It's about blending the wild plants into the landscape alongside the cultivated herbs and vegetables. It's imitating the way Nature grows plants —in patches, not rows. Instead of straight rows with a monoculture crop there is a range of different types of plants that mingle together and help each other. A forager's garden produces more and more each year with less work. It restores a stable ecosystem that can look after itself, with habitat for wildlife, food, and people and medicine for everyone. A place to grow wild.

Foraging is an activity that I have been engaged in for most of my life. Knowing when a plant is in season, where it is growing, and being there at the right time are all essentials when foraging.

When I arrived in the Hampton Roads area in southeast Virginia in the late 1970s, when it was still a young city, there were lots of foraging grounds. I had my favorite spots where I could freely go, forage for whatever was in season, and then look for the next foraging patch. I look back over the years of foraging and I realize the number of hours spent traveling, sometimes for long distances, to harvest a particular berry or nut or to scout out for potential foraging grounds.

And then there were those times of watching and waiting to harvest that field of evening primrose seeds. Finally, it would be time. One year, with clippers and brown paper bag in hand, I traveled to the site only to find out the whole field was mowed the day before. The empty lot where the passion vine grew and where I had been going for years suddenly looked appealing to a developer who built a house there instead. The patch of wild greens that a few days before had looked lush and green now looked brown and droopy from the fresh application of herbicides.

Forests are cleared, habitat is destroyed, and farms disappear. Abandoned lots and overgrown fields are replaced with buildings and development. It's not plants that are becoming rare, it's the habitat. It's only a matter of time before that empty lot gets developed. Or the edges of fields or forests get sprayed with herbicides. Public lands have tightened the restrictions for foraging and no longer allow picking even for personal use. Private conservation groups promote, "Never pick anything in the wild," and the options dwindle. The list goes on. I have finally concluded that if you really want to harvest a particular food or plant, you have to grow it.

I saw what was happening in the mid-90s and bought 16 acres of raw, undeveloped land, all woods. When the real estate agent asked me what I planned to do with the land, I responded that I needed some foraging grounds. He said, "You've come to the right place." If you are in a position to buy a small piece of land or have access to property that you can go back

to year after year, that is ideal. Even a backyard or balcony for container gardening is a start.

People frequently ask me, “Where can I forage?” The answer is simple: “Grow your own.” *The Forager’s Garden* is about a new way of gardening. It is neither a gardening book nor is it a foraging book. It is about creating ecosystems that can provide wild food and medicine needed throughout the year based on individual needs without having to travel great distances to get it.

With food prices escalating, more people are taking an interest in growing their own food and medicine. Maintaining a traditional garden takes a lot of work. There is an ongoing battle with the weeds and the insects. Nature insists on covering the earth with plants wherever there is bare soil. And with the plants come insects. By mid-summer the traditional gardener is overwhelmed. This is when the wild garden is thriving. The wild garden is a forager’s garden and requires little maintenance.

The interest in foraging has increased in recent years as people are becoming more aware of the benefits of the plants growing wild. Growing the plants that you use for food or medicine makes them available for

regular use and reduces the amount of travel time involved in seeking out foraging grounds. Observing them through their growing season allows you to become more connected to the plant, its growing conditions, knowing when it reaches its peak harvest time, and being able to use it when you need it.

Once established, a wild garden can produce an abundance of food and medicine and requires minimal maintenance. This book is about transforming your landscape from an ordinary lawn or meadow into one that produces food and medicine throughout the year. It will guide you in identifying and growing wild herbs and knowing what and when to harvest. Growing and harvesting the plants you need to treat common ailments that you experience can empower you to take your health into your own hands.

Restoring Wild Plant Communities

MAINTAIN WILD AREAS

Maintaining a green, monoculture lawn of grass by mowing regularly takes lots of gas and time. If you do nothing and just let it grow, you will soon learn it's not just grass. Wildflowers and seedlings from nearby trees and shrubs emerge from the soil and are mixed in, eventually forming a meadow. Include plantings of native trees, shrubs, and pollinator plants to form a natural community.

THE WILD GARDEN

The wild garden imitates the way Nature grows plants. Instead of straight rows with a monoculture crop there is a range of different types of plants that mingle together and help each other. In a natural community change occurs. Nothing stays the same. Succession is a natural part of the process.

CHOOSE NATIVE PLANTS

Native plants have adapted to the environment, the soil, and the climate and are much more likely to survive than a non-native species, reducing the cost

of replacement. Because they have adapted to the environment, they need less care. Native plants attract native pollinators as well as other wildlife, forming a natural community.

The Forager's Garden goes beyond foraging. It's about working with nature to create ecosystems for the community of plants, animals, and people. It's about restoring wild plant communities, bringing the plants you want to forage into your landscape and giving them a place to grow.

Most important, it's about connecting with the plants. *The Forager's Garden* is a book about identifying the plants growing around you, incorporating wild plants into your landscape, and processing and preparing them for food and medicine. It's about working with nature to restore wild plant communities and ecosystems for everyone.

CHAPTER ONE

PLANNING: BEFORE THE BEGINNING

You've made the decision to grow wild. Where do you begin? What you grow will be determined by a number of factors including the amount of space you have, sunlight, moisture, and type of soil. It helps to know what the previous land use was and if it had been treated with herbicides or pesticides. Herbicide use is easier to detect. Certain indicator plants that should be there and are missing are a sign the area has been treated with herbicides. Before you plant or remove anything from your landscape, develop a relationship with the earth. Get to know what is growing there naturally and what animals visit the area.

Site Assessment—*Observation*

There may be parts of your yard or landscape that are in full sun part of the day, semi-shade, or shade. Watch to see from which direction the sun comes up and where it sets. This will change with the seasons. Morning and afternoon sunlight can make a difference. Notice if there are any slopes or changes in elevation. After a rainy period, assess which areas have standing water and which drain easily. Matching the plant to the environment is important.

Plant Survey—*Identification*

Choose the area that you want to grow wild and avoid mowing for a year. Let it go through the seasons and see what comes up naturally. Do a plant survey and make a list of plants that are growing there and what they offer. Determine which ones to keep and which ones to remove. For me, careful observation of which plants grow well in similar sites was important.

THICKETS

Thickets develop along the edges of fields, forests, and gardens. They are untended pieces of land that have been reclaimed by nature and are a mix of everything wild: grasses, vines (both native and non-native), shrubs, and young tree seedlings. Thickets will eventually be reclaimed by the forest if allowed to grow wild long enough. Thickets allow tree seedlings to get a start and provide support for the vines that climb and wrap around them.

I decided to turn a thicket on my new property into a productive food-producing area. I learned that removing unwanted species can be done in several ways. First, do an inventory of the species already growing in the area and decide which ones you want to keep. Thickets are a breeding ground for invasive and aggressive species such as privet, mimosa,

Japanese honeysuckle, and greenbriers that quickly move in and form a tangle of growth. A thick layer of mulch from years of fallen leaves, branches, and twigs builds up under the canopy of the trees of the forest. Thick tangles of vines wind their way up and around seedlings and small trees that are coming up in the area, mostly invasive non-native species.

REMOVAL OF UNWANTED SPECIES

After the first year of not mowing, succession begins and there will be a diversity of plants, some more desirable than others. Vines are one of the pioneer species. They need lots of sunlight and will climb and wrap around nearby trees and saplings that are just coming up. There are lots of vines; some are native, some are invasive aliens, and others are naturalized.

Pretty soon a thicket has developed. The area has become a weed patch. Next comes the sorting process of deciding what to keep and what to remove. Some people want to start from scratch. Others will go out and buy plants to add to their landscape only to find out it's already growing there.

Burning

Growing up, I always looked forward to mid-winter when we would have our huge fire in the woods. Dad would build a brush pile with downed branches and brush and then wait for a cold day to burn. We would spend the entire day tending the fire until it had burned down to a nice bed of ashes. This would become the seed bed for tobacco, tomatoes, and other spring vegetables.

Burning was a practice used by the indigenous people in precolonial North America. In the southeast the slash-and-burn technique was used. Fields were cleared of trees by girdling them by cutting rings into the bark. After the trees died, they were burned and the area used for agriculture (Hudson, 1976).

Fire

Using fire in the landscape as a management tool to remove the thicket and unwanted invasive species is one way to clear back overgrowth and kill off unwanted vegetation. Using a torch helps to control the flame. Fire is a part of nature that is necessary for the life cycle of certain plants and animals. Low-impact burning, when used in an appropriate manner, can provide a multitude of benefits. It can stimulate the growth of the herbaceous layer and increase nutrients available to plants. Fire restores fire-dependent species and rejuvenates the habitat. Low intensity fires help to reduce the build-up of downed branches and debris and return nutrients to the soil.

Hand Removal

The next step is the removal of vines and invasive tree seedlings that are left behind by the fire. Using a pair of strong loppers, the charred vines and seedlings should be clipped at the base and then pulled out of the trees, opening up a light gap on the ground level. The clippings can be piled into an area to break down as mulch or put in a burn pile to further break down.

Block the Light

Plants—including weeds—need light to grow. Without light they wilt and die. Blocking the light can be done in various ways. A thick layer of mulch works great. If you don’t have access to mulch, you can cover the area with cardboard, landscape fabric, or mats.

Plant Selection

Selecting plants to add or introduce to your site can be done in a couple of ways. First, get to know the area, the growing conditions, and plants that are currently existing there. Visit similar natural areas and observe the plants growing in a similar environment. Be aware of which plants are invasive or aggressive. Decide which plants you need or want to meet your health and dietary needs and where in your landscape to include them.

Plants that grow and reproduce in a particular region over several generations adapt to the conditions of that region resulting in a genetically stronger plant that will maintain its health and produce more heavily under both normal and stressful situations. Such plants usually have a natural resistance to insect invasion and require a minimal amount of water. There are often native plant sales hosted by native plant society groups that offer a good selection of natives for your area.

PLANTS/SEED SOURCES

There are going to be times when there are specific plants you want to grow in a particular area. The conditions are right, but the plants aren't there. Introducing them into your landscape may require seeding them or bringing in live plant material. Careful observation of which plants grow well in similar sites is important.

Plant Rescues

Be on the lookout for areas that are being sold for development. For several years I participated in plant rescues with the native plant society to wild

areas that were scheduled to be cleared and developed. When the conditions were right, I would bring back seeds, cuttings, or seedlings. If you see such an area, contact the owner to get permission to go in and rescue plants.

Seeds from berries that have been eaten by animals and left behind in their droppings germinate and leave a small group of seedlings in their place. These seedlings can be removed, planted in a pot, and nursed along until they are strong enough with a good root system before putting them into the ground. When relocating plants, try to be sure the area where it is being moved to matches the conditions from which it came.

Harvesting Seeds

The best source for wild seeds or plants is in the wild, especially if you want to be sure the plant is a straight native. When gathering seeds in the wild, use the same foraging principles that you use for plants. Take what you need, leave some to reseed, some for the wildlife, and some for the next group of foragers. Never take from the first plant you approach nor the last plant you see.

There is no one season that is best for gathering seeds in the wild. When you're there and the seeds are ready, it's time. It's going to vary from year to year and season to season. The main thing is to get to know the plants and their individual life cycles. Watch for the plants to mature and then collect the seeds and store them until it is time to replant. The times are going to vary depending on the species and can occur year-round.

Some seeds mature in the fall. At this stage, the plant looks completely different than it did when it was flowering or in its early, leafy stage in the

spring. Following a plant through the seasons helps to become familiar with how it looks in all its stages.

Seed Saving

Saving seeds is important and can benefit you in many ways. It is one way of making sure you always have your favorite edible or medicinal plants nearby. But it is also a way of choosing plants that have proven to be hardy in your area.

Paper bags or paper envelopes are handy for collecting. Seeds need to be protected from heat, moisture, and light. Thorough air-drying after the seed is collected is important and can be accomplished by hanging the paper bag in a well-ventilated area. After the seeds are completely dry, they need to be stored in a cool, dry place.

The seeds are the lifeline of the plant. Approach seed harvesting in the same way you approach plants you’re going to harvest. Before harvesting seeds, make sure there’s enough to reseed, plus some for the birds and other seed-eaters to eat.

Plants that grow and reproduce in a particular region over several generations adapt to the conditions of that region resulting in a genetically stronger plant that will maintain its health and produce more heavily under both normal and stressful situations. Such plants usually have a natural resistance to insect invasion and require a minimal amount of water and nutrients. They eventually become naturalized and are often considered wild. In fact, many of our wild edibles are descendants of domesticated plants or are related to them.

Seed Storing

Use paper bags or envelopes to put the seeds in. Leave the bags open so the seeds can air dry. Moisture in the seeds will cause mold. Seeds need to be protected from heat, moisture, and light. Thorough air-drying after the seed is collected can be accomplished by hanging the paper bag in a well-

ventilated area. After the seeds are completely dry, they need to be stored in a cool, dry place (Center Staff, 2025).

Seed Starting

Once you have decided where you want your wild garden and have a cleared area, you can start scattering seed. Begin by loosening the soil where you want to scatter your seeds and add a layer of compost. Adding compost inadvertently introduces other plants into the area.

Spring or fall is the best time to plant seeds. For some plants, fall is better because a cold span is sometimes necessary to break the dormancy period. Planting seeds in a pot and leaving it outside, exposed to the natural elements, has proven to be successful in germinating some seeds. Be sure to water the potted seeds on a regular basis.

Seed Sources

Native plants and/or seeds are available commercially from catalogues and native nurseries. Many of the catalogues and nurseries that sell natives are actually selling cultivars or nativars. In the spring, look for native plant sales in your area. A number of environmental groups, including native plant societies, promote native plants by hosting native plant sales for the public. They also periodically host seed swap events where you might find that rare seed you've been looking for.

SEED DISPERSAL METHODS

Fruits are the seed-bearing parts of plants and include berries, legumes, and nuts. If the seeds just fell to the ground, they would all come up under the parent plant and have to compete for sun, water, and nutrients. Plants have developed a variety of adaptations that ensure the seeds will be spread out and produce new plants. The most common methods are wind and animals.

Wind Dispersal

Dandelions have parachute-like wings that carry the seeds by the wind. Maples, pines, and sweetgums are among those whose seed is also attached to wings and is propelled through the air. Cottonwood trees and willows

have seeds inside cotton fluff and blow in the wind. Others attach themselves to fur and clothes and hitchhike to new destinations.

Animal Dispersal

Fleshy fruits lure animals to them to taste their sweetness. The seeds are passed through the digestive system and, depending on where they land, will grow into new plants. Chestnuts and chinkapins have a spiky, spiny burr outer husk that attaches itself to the fur of mammals and is carried to other areas to be dropped. Some fruits just simply drop to the ground. Birds feed on the berries and drop the seeds wherever they go.

Many of these wild fruits are edible and provide health and medicinal benefits. Some can be eaten raw while others can be cooked or preserved for future use. As foragers, it is our responsibility to make sure the seeds from the fruits that we harvest are distributed as well.

Explosion

Jewelweed (*Impatiens capensis*) has seeds that are spring-loaded. When touched or rubbed between your fingers, they snap open, dispersing the seeds in all directions.

Bittercress (*Cardamine* spp.) launches its seeds into the air when they are mature. If it is growing in your lawn, you will feel them exploding as you walk across the lawn.

Gravity

Nuts and many fruits and grass seeds simply drop the seeds under the plant. Sometimes the fallen fruit is carried off by other animals or rolls down a slope.

Fruit Types

Achenes are small, dry, one-seeded fruit that develops from a simple ovary.

- **Sunflower** (*Helianthus* spp.) seeds are enclosed in a hard, dry fruit that develops from the flower head at the end of stems and branches.

- **Thistle** (*Cirsium* spp.) seeds are brown and flattened. Each seed is attached to a feathery, white-brown pappus.

Aggregate fruit form from multiple ovaries in the same flower and fuse together when ripening.

- **Strawberries** (*Fragaria virginiana*) are multiple fruits consisting of many tiny individual fruits enclosed in a fleshy receptacle. The whitish specks are the true fruits and surround a tiny seed. These are called achenes.
- **Blackberries** (*Rubus* spp.) are aggregates of drupelets, composed of small, individual drupes.
- **Mulberries** (*Morus* spp.) are an aggregate of sweet and juicy drupes.

Berries are fleshy fruits with seeds distributed throughout.

- **Persimmons** (*Diospyros virginiana*) are berries with large, multiple seeds inside.
- **Muscadine grapes** (*Vitis rotundifolia*) are dark purple berries with sweet pulp and multiple seeds inside.
- **Passionfruit** (*Passiflora incarnata*) is an egg-shaped fruit with a rind that is green and then becomes yellowish as it matures. Inside the rind is sweet and juicy fruit with numerous small seeds.
- **Pawpaw** (*Asimina triloba*) produces an edible fruit that is three to six inches long toward the end of the summer. The fruit is a berry with large black seeds down the length of the fruit.

Capsules develop from a common pistil and may contain many seeds.

- **Evening Primrose** (*Oenothera biennis*) contains four-seeded capsules that are green and then turn brown when they ripen containing many little black seeds.

Cones technically are not fruits; they are a mass of scales or bracts.

- **Juniper** (*Juniperus* spp.) cones are referred to as berries but they are not technically a berry. They are a cone with unusually fleshy and merged scales called a galbulus.

Drupes are fleshy fruits with a single seed in the center, sometimes two.

- **Sumac** (*Rhus* spp.) forms dense clusters of fruits at branch tips that are covered in red hairs.
- **Wild Black Cherries** (*Prunus serotina*) have purple-black fruits that hang in drooping clusters in mid-summer.
- **Plums** (*Prunus* spp.) have fruits that grow in clusters and turn bright red when ripe in late summer.
- **Black Gum** (*Nyssa sylvatica*) produces a bluish black fruit with a single seed and a flattened pit in the center.

Follicles are fruits that develop from a single pistil and break along only one suture.

- **Prickly Ash** (*Zanthoxylum clava-herculis*) has small, round fruits that turn brown when mature and split open to reveal a shiny, black seed.

Hips are the fruit of the rose and consist of a fleshy receptacle enclosing numerous achenes.

- **Wild Rose** (*Rosa* spp.) has hips that are round or oval-shaped and are usually bright orange or red. They contain seeds in the center.

Legumes have pods that crack open along two sutures.

- **Wild Beans** (*Strophostyles* spp.) have pods that resemble our cultivated green bean and turn brown as they age and release the seeds when dry.
- **Redbud** (*Cercis canadensis*) has flat, thin pods about three to four inches long that are green in the beginning and then turn reddish-brown as they age. They have several seeds inside.

Nuts are characterized by a single seed that is surrounded by a hard shell. Around the hard shell is a protective outer husk that can assume different shapes. Nuts drop to the ground when mature and rely on mammals to disperse them.

- **Acorns** (*Quercus* spp.)—The fruit of the oak is an acorn. Acorns have caps, which are the outer hull.
- **Black Walnuts** (*Juglans nigra*) have a green, fleshy outer husk that looks like a smooth, green ball. The inner shell is hard with ridges and turns black when it dries. The nutmeat is oily and sweet.
- **Chestnuts** (*Castanea dentata, C. pumila*) have needle-sharp spines surrounding the shell.
- **Hazelnuts** (*Corylus americana*) have a leafy outer husk.
- **Hickory nuts** (*Carya* spp.) have an outer husk that is ribbed.

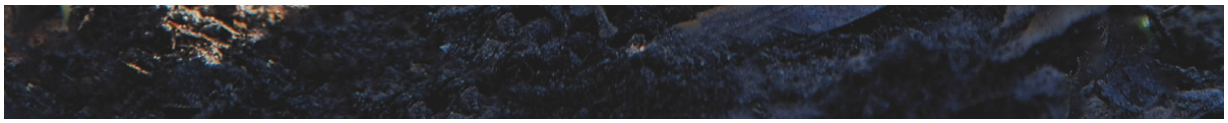
- **Beechnuts** (*Fagus grandifolia*) have a triangular husk with weak spines.

Pomes are fleshy fruits consisting of an outer fleshy layer and a central core.

- **Hawthorn** (*Crataegus* spp.) has fruits that resemble a mini apple with a core and seeds inside.
- **Crabapple** (*Malus* spp.) is similar to hawthorn and also looks like a miniature apple with a core in the center.

Samaras are dry, usually one- or two-seeded dry fruits and the seeds have a wing attached to them.

- **Ash** (*Fraxinus* spp.) has conspicuous seeds attached to wings.
- **Elm** (*Ulmus spp.*) has small, oval, flat fruits with wings.
- **Maples** (*Acer* spp.) have two conjoined wings, each surrounding a seed.



CHAPTER TWO
EARTH TIME

Spending time with the earth is a part of growing wild. Get to know her moods and cycles and the seasonal changes, which plants return every year and which ones disappear.

Get a handful of soil and smell it. Walk across the area with bare feet. The feel of the earth will tell you a lot about the type of soil you have. With a hand trowel, dig several inches into the earth and scoop out a handful of dirt. Look at the color, the texture, and the smell. All these are indicators of the type of soil you have.

Contact with the soil and a specific soil bacteria trigger the release of serotonin and dopamine, the "be happy" chemicals, in our brains. Robin Wall Kimmerer (2013) explains that "The smell of humus exerts a physiological effect on humans. Breathing in the scent of Mother Earth stimulates the release of the hormone oxytocin, the same chemical that promotes bonding between mother and child." Oxytocin promotes a feeling of well-being and is sometimes referred to as the hormone of love (Santos-Longurst, A., 2013). The earthy smell of soil comes from the chemical compound called geosmin that is secreted by bacteria and some plants. The scent is carried to the brain's emotion and memory centers (Shutes, J., 2025). According to Shutes, just smelling the soil has been found to lower the heart rate and reduce stress. Getting your hands in the dirt is the best way to absorb this "feel-good" chemical. Kids love playing in the dirt, and it's good for them!

Weeds

There has been an ongoing battle between landowners and weeds, a battle using all the modern-day weapons, from tilling to mowers to chemical herbicides. Weeds are a part of the natural environment and often have beneficial uses, including food and medicine. But often they get chopped down or sprayed before they're mature enough to harvest. I decided that the weeds in my area needed a safe place to grow. My yard and garden soon became that place.

If you start with the bare earth, you will find it won't stay bare for long, especially if it is disturbed soil and has been used for gardening in the past. Start by turning the soil over, break up the clumps, and then observe which plants come up naturally without planting anything. Thousands of tiny seeds are lying dormant in the soil just waiting for the soil to be disturbed and for the right conditions to germinate. It doesn't take long.

READING THE SOIL

To read the soil, read the weeds. If your landscape is free of herbicides, the weeds should be there. The type of weeds growing will tell you a lot about the type of soil you have. They can tell you if the soil is acid or alkaline, healthy, or depleted. Weeds can tell you how well the soil drains or retains moisture.

Healthy soil is the secret to healthy plants and consists of dead, organic matter and minerals. An underground mix of microbes, mycelium, tiny insects, and worms contribute to healthy soil. Feed the soil by adding nutrient-rich organic matter. Soil properties affect infiltration to the soil beneath the surface. Infiltration is the downward entry of water into the soil. Water must enter the soil to be of value (Rosenbaum, 2023).

De-vegetation, disturbance, grading, ditching, and soil compaction can lead to increased flooding and erosion and less infiltration into soils. An agricultural field that has been lying fallow all winter will experience soil loss with the first heavy spring rain, eroding the top soil and carrying fine soil particles to low-lying areas as it washes down the slopes.

Soil Indicators

Plants that are growing naturally in a particular area will give you clues as to what type of soil you have and how healthy it is. These are called indicators and they can tell the type of soil and water infiltration that they are emerging from. Plants like primrose and dandelion have deep, strong tap roots that break up the soil. They can grow in soil that is compacted and lacking water and nutrients that other plants would need in order to grow. Other indicators of poor soil include sheep sorrel, ragweed, plantain, yarrow, and mullein. On the other hand, purslane and amaranth like rich soil (Sweetser, 2024).

There are plants that are indicators of wetlands, too. While the area may not be under water year-round, it may have standing water for parts of the year or after a heavy rain. Low lying areas where water collects after a rain with damp, mucky soil will have plants that differ from those growing on

dry, sandy soil. Dock is a common herb in these wet areas. They are an indicator of heavy, wet soil. Dock will survive during dry periods but will thrive in wet, soggy conditions. Elder also likes wet conditions.

An un-mowed, untreated lawn will have varying shades of green. These shades of green are indicators of the type of soil the emerging plants are growing from. The plants often occur in patches. You will see a small population of a species of plant growing in one area of your yard but you won't see it growing anywhere else. You may try planting a tree or herb that should make it, meeting all the right conditions, and it still doesn't survive. The answer is in the soil.

Henbit (*Lamium amplexicaule*) is an indicator plant for high nitrogen.

Sweet and Sour Soil

The acidity level determines whether the soil is sweet or sour. The plants that emerge naturally in an area are indicators of the acidity of the soil.

Acidic soil refers to soils that are below 7.0 pH and are called sour. Pines are acidic and as their needles drop to the ground, they contribute to the

acidity of the soil, lowering the pH. Using pine straw as a mulch around plants also increases the acidity. Acidic soil is the norm in most natural areas, including woodlands. As organic matter breaks, the soil underneath tends to acidify. Sour soil can be sweetened with ground limestone.

Blueberries grow in the understory in pine forests and thrive on the acid soil. Along the edges of pine forests, mullein sprouts. In yards or gardens with pine trees, sheep sorrel and oxeye daisy emerge.

Alkaline soils contain high amounts of calcium, sodium, and magnesium and are considered sweet. Water that has a high mineral content can contribute to high pH levels. (MasterClass, 2021). Chickweed, peppergrass, and mustards are indicators of alkaline soil. Sulfur can be used to make the soil sour.

In the spring, there are lots of early bloomers. One of the first to bloom is dead nettle followed by henbit, both members of the mint family with very similar appearances. Two very similar but different plants with similar flowers that have different shades of purple. They both grow in open sunny areas. However, you don't see them growing together. Henbit grows in light, sandy soils, an alkaline environment. Dead nettle prefers an acidic environment with a loamy soil texture.

Herbaceous Plants

Herbaceous plants are non-woody plants and can be classified as an annual, biennial, or perennial. Annuals live through one season, bloom, and go to seed and die. Biennials live through two seasons. They generally germinate in the late summer or early fall, grow through the winter, and the next spring or early summer send up a flower stalk, bloom, and go to seed. Perennials grow year-round. The tops may die back, but underneath the surface of the soil, the roots are alive, just waiting for warm days to send up new growth.

ANNUALS

The first to appear are the familiar annuals: chickweed, cresses, wild mustard, corn salad, amaranth, lamb's quarters, and purslane. These plants grow through the first season, bloom, and go to seed. These annuals represent the first stage of succession, when one plant community is replaced by another over time.

Most of these annuals are naturalized, non-native species that are edible with medicinal benefits as well. They mostly arrived with the early settlers, planted as their food and medicine, and then re-seeded and spread. Some came unintentionally as birds dropped their seeds. The wind carries seeds of some species while others come in unknowingly with other plants as seeds in the soil. They also come up in the cracks of sidewalks, at the edges of parking lots, and any spot where there is bare soil. Many are referred to as invasive aliens and efforts are made to eradicate them. These same weeds that we fight to get rid of are loaded with vitamins and nutrients and often are more nutritious than the cultivated vegetables they are growing next to in a garden.

Bittercress—*Cardamine spp.* (Brassicaceae)

Bittercress is an annual herb and member of the mustard family that grows up to one foot tall in lawns, gardens, and edges of parking lots. There are native and non-native species. It is a cold weather plant and forms a flat, basal rosette of leaves in the fall and grows throughout the winter. In late winter or early spring, it starts sending up its flower stalk and produces a small white flower with four petals. Following the flowers are the seeds that are spring loaded and explode when you walk past them, the plant's way of dispersing its seeds.

Chickweed—*Stellaria media* (Caryophyllaceae)

Chickweed is an annual herb that starts making an appearance in late summer and early fall in garden beds and disturbed areas. It will continue to

grow through the winter unless the temperatures drop below freezing for an extended period of time. Leaves are small and grow in pairs on the stem. As the plant matures, it sprawls across the ground, forming a weedy mat. It is most abundant in late winter and early spring when it starts to flower. The flowers develop at the ends of the stems with five white petals that are deeply notched, giving them the appearance of having ten petals. Soon after, it goes to seed and dies back, forming a weedy mat in its place. Remove the mat at its base and the entire mat will come with it.

Cleavers—*Galium aparine* (Rubiaceae)

Cleavers is a common herb that literally reaches out and grabs onto you and clings to you as you pass by. Also known as bedstraw, cleavers is a native annual that emerges in the early spring. Leaves and stems are both covered in small, fibrous hairs with tiny hooks on the end, enabling it to stick to clothing and other objects. Cleavers is also one of the few wild greens that has leaves in whorls with six to eight slender leaves forming a circle around the square stem. Tiny, white flowers with four petals appear in the spring in the leaf axils followed by tiny, bristly fruits.

Corn Salad—*Valerianella radiata* (Caprifoliaceae)

Corn salad is an annual herb that doesn't show up until late autumn or early winter. Even then, it's often overlooked. It develops a basal rosette of leaves low to the ground. It develops a flower stalk that grows from four to sixteen inches tall and is topped with small, white, flat-topped clusters of flowers with five petals. The leaves are in pairs and oval-shaped with rounded tips. There is both a native and non-native species that look very similar to each other.

Dead Nettle—*Lamium purpureum* (Lamiaceae) or Henbit—*Lamium amplexicaule* (Lamiaceae)

Dead nettle and henbit are both non-native members of the mint family and are closely related. They look very similar. Even though they are in the mint family, there is no menthol smell. The stem is square like all mints. The leaves of dead nettle have a dark, purplish appearance and resemble stinging nettle but lack the sting. The lower leaves are on long stalks while the upper leaves clasp the stem. Each spring, both species spread their pinkish-purple hues across farm fields and in open areas where they grow. They like open, sunny areas, and are especially fond of lawns and gardens. Even though neither are native, they produce a profusion of nectar for honeybees, who also are not native, at a time when there aren't a lot of other flowering plants to forage from.

Lamb's Quarters—*Chenopodium album* (Chenopodiaceae)

Lamb's quarters is a naturalized annual that shows up in gardens and fields. It is an indicator of rich soil that is high in nitrogen (Sweetser, 2024). It is a member of the amaranth family and reaches a height of three or four feet tall. The bluish-green leaves are somewhat triangular with a white coating on new growth and underside of leaves. Branched stems produce small, inconspicuous greenish flowers along the stem, followed by shiny, black seeds that are high in protein.

Lamb's quarters leaves are mild tasting and have a high nutritional value. They can be eaten raw in salads or cooked as greens. They contain vitamins A, C, calcium, thiamine, thiamin riboflavin, niacin, and iron.

Caution: Avoid harvesting lamb's quarters in areas that have a high nitrate content from chemicals or fertilizers since they are prone to accumulating it into their system.

Peppergrass—*Lepidium virginicum* (Brassicaceae)

Not a grass at all, but rather a member of the mustard family, peppergrass is almost completely overlooked until it goes to seed. Then the tiny, almost

round, numerous flat seed pods with a slight notch at the top suddenly become visible. Clustered at the top of the stalk, the seeds are easy to spot. When bitten into, they impart a strong, peppery flavor.

Not so visible are the leaves. Like many members of the mustard family, a basal rosette of leaves develops during the winter months. The leaves are small and narrow and blend in with other plants or hide beneath those that have died back for the winter.

Purslane—*Portulaca oleracea* (Portulacacea)

Purslane is a non-native annual herb that emerges later in the spring after the daytime temperatures climb into the 80s. Look for it in garden beds and edges of lawns where there is plenty of sunlight. It is a summer green. It prefers rich soil and is an indicator of high phosphorous (Sweetser, 2024).

Purslane is easy to identify. It has thick, succulent leaves and reddish-purple stems that sprawl across the ground and forms clumps. Purslane is drought tolerant. It has adapted to growing in hot, sunny conditions by storing excess water in the leaves and stems. Fleshy leaves are oval-shaped with rounded tips and smooth margins. Small, yellow flowers with five petals appear on bright, sunny mornings and are open for only a few hours before closing up. Following the flower is a seed capsule that releases numerous tiny black seeds.

Caution: There is a toxic look-alike. Spotted spurge (*Euphorbia maculata*) is another sprawling plant that grows in similar conditions as purslane. It also has reddish stems but the leaves are much smaller and not as succulent. When the leaves and stems are broken, it exudes a white, milky sap that is toxic.

Shepherd's Purse—*Capsella bursa-pastoris* (Brassicaceae)

Shepherd's purse is a naturalized member of the mustard family that comes up in lawns and gardens with a basal rosette of leaves in the winter. The

leaves are two to five inches long, toothed or pinnately lobed and relatively long-stalked. It is the fruits from which the common name derives. They are notched at the tip, giving it the shape of a heart, and contain a few small seeds. It just looks like a weed until it blooms and produces its heart-shaped pod-like silicles. Shepherd's purse is a spicy potherb with some cancer-preventing activity as well.

Wild Mustard—*Brassica* spp. (Brassicaceae)

Wild mustard is a naturalized herb that has escaped cultivation and now grows wild. It grows through the winter, providing a source of edible greens. Wild mustard is a pungent herb containing sulfur compounds. In the early spring, it starts blooming with four-petaled flowers borne in clusters. Flowers may be yellow, lavender, or white. Following the flowers are dry fruits knows as silicles.

Wild Pansy—*Viola tricolor* (Violaceae)

Wild pansy, also known as Johnny-jump-up, is a non-native annual, sometimes biennial, herb that was introduced from Europe. It is a small plant with irregular violet-like flowers that can be purple, blue, yellow, or white, often two-tone. It is commonly found in fields and gardens and grows in full sun and moist, well-drained soil. Violet leaves and flowers are edible and contain antioxidants and flavonoids.

BIENNIALS

Biennials appear along with the annuals. They form a basal rosette of leaves the first year, often in the fall. They grow through the winter, sending down a deep taproot the first year, and then sending up a flower stalk in the spring of the second year, blooming, and going to seed.

Evening Primrose—*Oenothera biennis* (Onagraceae)

The evening primrose is a native biennial that comes up from seed in late summer or early fall and forms a basal rosette of leaves that remain green

through the winter. The long, narrow leaves lie flat on the ground and are often speckled with red spots. By early summer the flower stalk, reaching up to eight feet in height, has developed. The flowers form at the top of the stalk and are pale yellow with four petals. The lowermost flowers open first and remain open through the night and into the morning. As soon as the sun hits them the next morning the flowers droop and new ones open the next evening.

Evening primrose is easy to grow from seed and can be transplanted during the first year. Scattering the seeds around the edge of a garden or herb bed in late summer will almost certainly result in plants coming up in the fall and wintering over. Once established, the evening primrose will continue to reseed year after year, coming up where conditions are suitable. All they need is space and plenty of sunlight. In exchange, they will provide you with food for mind and body.

Nature's Fireworks

When I think of evening primrose, I am reminded of a magical evening several years ago. I was visiting a friend for a fourth of July dinner party. As the sun began to drop below the horizon, a movement to the right caught my attention. As I turned and looked, a most amazing event occurred. The bud of an evening primrose was swelling right before my eyes. Suddenly, it popped open as though attached to a spring that was released, glowing with a pale yellow light that lit up the evening sky. As we watched, one by one, flowers began popping open. As each one opened, we were drawn to see who would be next. By the time the sun had set, the area where the evening primroses were growing was aglow. I have since established my own stand of evening primroses and look forward to their spectacular display of lights each year.

Burdock—*Arctium* spp. (Asteraceae)

Burdock is a non-native biennial that was introduced from Eurasia and has quickly adapted to the environment in North America. It develops a basal rosette of large, wooly leaves the first year and in the spring of the next year sends up a flower stalk. The flowers are purple, sometimes white, with a seed head that is most distinguishable. The head has distinctive hooked bracts that attach to your hair or the fur of animals where it is later dropped and unintentionally replanted.

Burdock does best in a loamy soil with a neutral pH in part shade or full sun. To grow, sow seeds directly into the soil after the last frost. Burdock can be invasive, so plant it away from other plants.

Horsemint—*Monarda punctata* (Lamiaceae)

Horsemint, also called horsebalm, is a short-lived perennial or biennial of the mint family. It blooms in late summer with yellowish, purple-dotted flowers that grow in whorls in the upper leaf axils with white or pale purple bracts at their base. The square stem and opposite leaves are characteristic of the mint family and may grow up to four feet tall.

Horsemint grows in dry sandy soil along the coastal plain and in prairies of the mid-west. There are other species that occur over most of the United States and southern Canada. The lance-shaped leaves, when crushed, are strongly aromatic and can be used, fresh or dried, to make a tea by steeping them in hot water.

Horsemint is easily propagated from seed, which can be collected during the fall and winter months. The seed head looks similar to the cultivated bee balm and can be grown the same way.

Thistle—*Cirsium* spp. (Asteraceae)

There are native and non-native thistles. They are both loved and hated. They are easily recognized by their large spiny leaves and stems. Flowerheads are composed of many tiny florets that are purple to pink, or even yellow, which become brown seeds with long tufts of white hairs for

wind dispersal. Thistles grew in the fields on the farm where I grew up and one of our jobs was to chop out the thistles. This was the cow pasture and cows and thistles didn't mix. My next experience was eating them. Flowers, flower stalks, and seeds are edible. I was hooked. The stalks were similar to celery but sweeter and juicier.

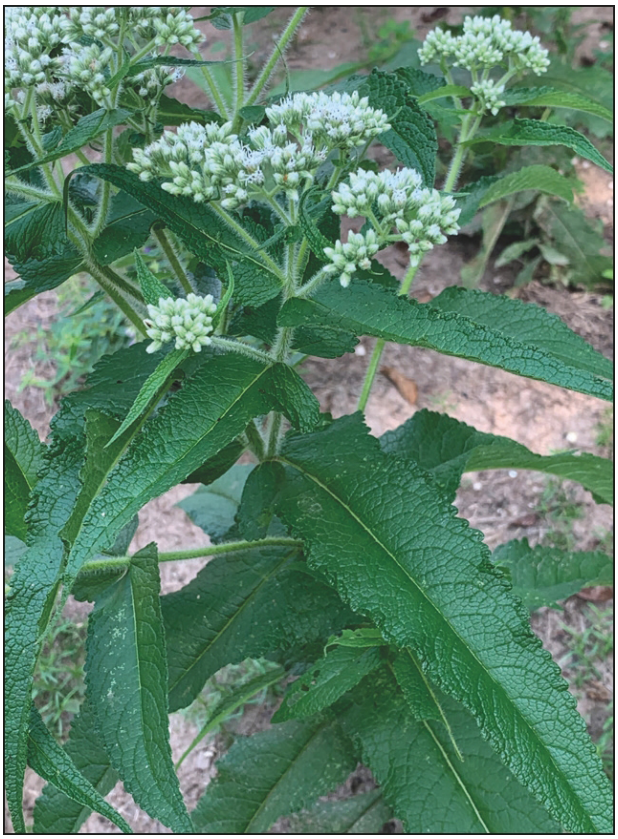
Thistle flowers bring beauty to the landscape and are a source of nectar for a number of pollinators, including bees and butterflies. Thistle seeds attract goldfinches and other seed-eating birds. They use the thistle down to line their nests.

PERENNIALS

Mixed in with the annuals and biennials are the perennials. These are plants that come back year after year from the same root. Seedlings of nearby trees and shrubs as well as perennial vines also emerge. This is a good time to remove by hand those plants you don't want while they are young and when you are able to remove the entire plant by its roots. If it's something you want to keep you can either leave it or transplant it to another area.

Boneset—*Eupatorium perfoliatum* (Asteraceae)

Boneset is a perennial herb of the southeast that blooms in late summer with flat clusters of pale white flowers. It stands three to four feet tall and forms clumps by mid-summer. Boneset can be found in moist soils in meadows, stream banks, and thickets. The most distinguishing feature are the leaves that are wrinkled, opposite, and totally encircle the hairy stems, giving the appearance of the stem growing between the paired leaves.



Boneset is used to help relieve symptoms of flu and to relieve aches and pains associated with a fever. It may also help clear mucus congestion from the respiratory tract (Hoffman, 2003).

Dandelion—*Taraxacum officinale* (Asteraceae)

Dandelion is a non-native perennial that originated in Eurasia and came to this country with the settlers. Dandelion has long, narrow, and irregularly toothed leaves that form a rosette at the base of the plant. Dandelions are sometimes an indicator of poor soil that is low in calcium. The tap root digs deep into the soil, breaking it up as it does so. They are an excellent source of nectar for bees and insects (jravirginia, 2021).

Plantain—*Plantago lanceolata, P. major* (Plantaginaceae)

I first learned about plantain as a wild edible herb. After tasting it, I found it to be slightly bitter and astringent. Cooking it as a green vegetable made it

more palatable. Then I found that it could be used to relieve bee stings. It wasn't long before I had an opportunity to try the leaf. I selected a clean, uneaten one growing near where I had been stung, chewed it up, and applied it to the sting. Within minutes the sting was gone.

My next use of plantain came when I spent the night in a cabin with a moldy blanket hanging over the doorway. Within a couple of days, my sinuses were dripping non-stop. Knowing plantain was astringent, I picked a leaf and ate it. My sinuses dried up and I spent the rest of the week drip-free.

Plantain is a non-native, perennial herb that thrives in most soils. Leaves grow only at the base and form a basal rosette with veins that stem from the base and grow parallel to the leaf tip. There is a narrow leaf with thin, lance-shaped leaves and a broad leaf plantain that has broad, oval-shaped leaves. Both produce a leafless flower spike that emerges from the basal leaves and is covered in small, inconspicuous green to white flowers followed by seeds that spread vigorously.

Poke—*Phytolacca americana* (Phytolacaceae)

Poke is a native and is distributed in the eastern half of the United States, from Minnesota in the north to New England, south to Florida, and west to Texas and Mexico. It can be found growing in disturbed soils: on the banks of ditches, behind old sheds or other outbuildings, in garbage dumps, and in gardens and plant beds. Hundreds of tiny seedlings poke their way through the surface of the soil as soon as the days start warming. Roots already in the soil send up new shoots, and every year those roots and shoots get larger. Cut the plant off at its base and come back in a few days to find it has returned.

Poke is easier to identify in the fall than in the spring. It starts out as a bright green, succulent stem with oval-shaped leaves that taper at both ends. Sometimes there are red streaks going up the stem, an indicator of the presence of toxic alkaloids. As the plant matures, it may reach a height up

to 9 feet before dying back in the fall. Small white flowers appear in mid-summer followed by purple-black berries that often linger on the plant after the leaves have dropped. By this time the thick stalks have turned a deep red and the branches, loaded with purple-black berries, sprawl out in all directions from the main stem. This is the easiest time to identify it. Make a mental note of its location and come back in the spring when it is emerging once again for the harvest season.

Sheep Sorrel—*Rumex acetosella* (Polygonaceae)

Sheep sorrel grows in dry, sandy, acidic soil. Where sheep sorrel grows, blueberries will grow. It is an indicator of soil that is depleted of nutrients and low in calcium (Sweetser, 2022). It is a non-native perennial that forms colonies and can be spotted when blooming by its reddish or yellowish-green flowers.

Violet—*Viola sororia* (Violaceae)

Violets are a native perennial that are commonly seen in backyards and gardens in eastern and central North America. The heart-shaped leaves form clumps in moist, rich soils. It self-seeds as well, spreading with underground rhizomes, and can become quite aggressive in some areas.

Yellow Dock—*Rumex crispus* (Polygonaceae)

Yellow dock, also known as curly dock, is a non-native perennial herb that is commonly seen in fields, gardens, and disturbed soils. It grows in full sun and is tolerant of most soil types. Yellow dock has a basal rosette of leaves that are large and curly on the edges. A flower stalk that may get up to five feet tall develops during the summer and by fall the seeds turn dark brown to black. They remain on the plant through the winter.

Yellow dock is edible and medicinal. Young leaves are used as bitters for digestion. The root is a deep tap root and is a cleansing herb.

NATIVE VINES

Vines need a lot of sunlight and often form thickets at the edges of forests and fields. They are often mixed in with non-native vines. Some are beneficial and provide edible fruits while others provide food and shelter for wildlife.

Coral Honeysuckle—*Lonicera sempervirens* (Caprifoliaceae)

A climbing vine at the edges of forests and thickets, coral honeysuckle can be distinguished from Japanese honeysuckle by its bright red tubular flowers that appear in the spring. Leaves are opposite with smooth margins, with the upper leaves joined together around the stem.

Muscadine Grape—*Vitis rotundifolia* (Vitaceae)

Muscadine grapes are native and grow from Delaware south to central Florida and cultivated as far west as east Texas and northward along the Mississippi River to Missouri. It is a vigorous, high-climbing vine with tendrils that may grow up to 100 feet in the wild. Leaves are somewhat heart-shaped with a V-shape at the base with deeply serrated margins. It has small, greenish flowers in the spring, followed by fruits that ripen in late summer and early fall, about the time the leaves start changing color.

Passionvine—*Passiflora incarnata* (Passifloraceae)

Passionflower is a native herbaceous vine that is common in the southern states. It is a fast-growing plant that climbs over fences, trees, shrubs, or anything that will support it. It has large, deeply lobed leaves with tendrils in the leaf axils. The large, whitish-purple flowers are the most distinctive characteristic and appear during the summer months. A fringe of thread-like filaments grows out from the base of the petals and rests on them. Following the flowers are the fruits which are initially green and then turn yellow and wrinkly as they ripen.

Soil Types

Get to know your soil. Walk across the area with bare feet. The feel of the earth will tell you a lot about the type of soil you have.

Go out and get your hands in the soil and experience the feeling as you roll it around between your fingers. As a child, we would make mud pies, filling a bowl with freshly dug dirt and adding enough water to roll it into balls and form biscuits. It didn't take long to realize that not all dirt is the same. Soil particles varied in size and the color varied. Some soil would hold their shape and make a nice round ball while others would crumble and fall apart no matter how much water you added. Most soil is of four types: sandy, silt, clay, or loam. It can also be mucky soil or peat if there is a swamp nearby.

The texture of the soil contributes to its ability to hold nutrients and water. Compacted soil has increased bulk density and less oxygen. There is increased water runoff and less infiltration into the soil (Lane, 2025).

Sand is the type of soil found at beaches or along a shoreline where rocks and minerals have been broken down by erosion and wave action. Sandy soil feels gritty and drains quickly when water is poured over it. The color varies depending on what types of rocks or minerals have been ground up. Sandy soil tends to be acidic. Sandy soil has excellent aeration but decreased ability to hold nutrients and water.

Silt is not as coarse as sand and has a slightly slippery, silky feel and is smooth to the touch. Silt soils retain moisture and nutrients longer than sandy soils. They are carried along by the current in rivers, lakes, and coastal plains and deposited in low-lying areas.

Clay soils are heavy, smooth to the touch, and can be rolled into a ball that holds together easily. They are poorly aerated and slow to absorb moisture and drain, which means they can become rock hard in dry periods, and then waterlogged during wet spells. They are very fertile however and have increased water and nutrient holding abilities (Lane, 2025).

Loam is ideal for growing most fruits and vegetables. It's a balance of all the other soil types; fertile, free-draining, easy to work, and rich in organic matter. It is a mix of sand, clay, silt, and organic matter. Loam soil is the type of soil found along river bottoms.

Muck is composed of mostly partially decomposed plant material that has accumulated over long periods of time and is very acidic. It is like a giant sponge and absorbs and releases water slowly. Mucky soil occurs near swamps, marshes, and other wetlands (Hampton, 2024).

Stuck in the Muck

In some places mucky soil has no bottom, or so it seems. You step down and you keep sinking. What do you do? You drop to your knees and you crawl or swim out. And when you get experienced, you walk on water. I was in the marsh once, felt the ground vibrate next to me, and looked down to see what it was. A fat cottonmouth was laying there with its mouth open, warning me not to come any closer. I turned to flee and was trying to remember how to walk in the muck and finally decided, "Forget walking in the muck, just walk on top of it." And so, I did.

SOIL PREPARATION

Regardless of what you plan to grow, whether it be wild or cultivated, nurturing and enriching the soil is important. Healthy soil anchors the plants into the ground and at the same time provides the plants with water and nutrients. There are lots of amendments and options to choose from.

Soil Amendments

Rich, organic matter is used to build up the soil. The organic matter can come from compost, leaf mold, wood chips, or other organic source.

Compost and mulching are the secret to healthy soil. It regenerates the soil and creates the soil fertility needed.

Composting is a must. If you have a garden or grow herbs or other perennials, composting is essential. It can be as simple as taking a corner of your yard or garden and layering organic matter in a pile or mound and letting it rot. It is a way of recycling leftover plant-based food scraps, yard waste, grass clippings, and other yard debris. Compost is not the same as mulch. Compost is plant or animal material that has completely decomposed beyond recognition. It increases the soil's ability to hold water and promotes beneficial soil microbes and its capacity to hold nutrients (Lane, 2025).

To start out, lay out sticks or branches to build up on. This will allow drainage and air circulation. Organic waste, food scraps, and plant material can be added on top of the branches. Alternate between vegetable scraps and grass clippings or leaf mulch.

The pile should be at least three feet to raise the temperature necessary to kill seeds. Wood chips can be added to reduce bulk density and maintain air flow. Aerate on a regular basis by mixing the materials. Keep it moist. Microbes, worms, and other decomposers work to break down the material into dark, crumbly, nutrient-rich compost. After several months it is ready to use and can be added to the soil around the plants (Morini, 2018).

Weed Maintenance

Even a wild garden requires a certain amount of maintenance. If unattended, by the second or third year, grasses and seedlings of woody plants and vines move in. Succession will occur when one plant community is replaced by another. The second year will see young tree seedlings, vines, and brambles moving in.

The maintenance, however, is still minimal. Once a wild garden is established, the easiest way to remove unwanted weeds is by hand. The

plants have already adapted to the environmental conditions, needing little water except when they are first planted. They are also resistant to insect invasion and diseases.

Mulching is a technique used in landscaping for a couple of reasons, mainly to keep the weeds down by blocking the light. It also helps to prevent water loss and to build up soil fertility and organic matter. In nature, leaves drop in the fall along with branches and other forest debris. Animals leave their droppings and the soil is continuously being fed and nurtured. Plants need feeding, even the wild ones. Leaves are raked and bagged in the fall. These can be added to the compost and allowed to break down or used as a mulch around plants.

Plants need light to grow and will die back when covered up. Blocking the light can be achieved by using cardboard, weed fabric, wood chips, or straw as mulch. If using straw, make sure it hasn’t been treated with chemicals. Using straw from cutting back wild grasses is ideal. Begin by either removing the existing weeds by hand or mowing over them. Lay down a double layer of cardboard over the mowed weeds or cover with compost, organic garden soil, decomposing organic matter, or mulch. Leave the cardboard for several weeks, long enough to effectively smother the weeds.

When using cardboard, there are a few things to be aware of. There are chemicals in cardboard, ink, glue, and coatings. Avoid colored or white cardboard. Only use corrugated cardboard. Remove all tape, labels, and other packaging material before placing in the garden. Cover the cardboard with leaf mulch or compost. After about six weeks, the weeds beneath the cardboard should be killed off, the cardboard can be removed, and the space used for planting. Some choose to leave the cardboard and leave it to break down naturally, which takes a couple of years. Removing the cardboard allows new seedlings to emerge.

Biochar is a charcoal-like substance made by slowly burning plant materials and wood from agricultural and forestry wastes over a period of time in the absence of oxygen, called pyrolysis. It was first discovered in the Amazon where the soil quality was poor and was improved by adding biochar. It could have evolved from the slash-and-burn practice where areas were cleared and then burned to plant their crops. Partially burned wood would have been turned back into the soil, contributing to the health of the crops (Locke, 2021).

Charcoal is a purifying agent that soaks things up. It has been used to remove toxins from water and soil. It also contains nutrients that break down over time and can be returned to the earth to be used by plants.

There are several methods for making your own biochar. A simple one is to use a drum or trench and pile organic matter into it. Light it from the top down until the smoke has turned grayish-blue. Let it burn slowly until the organic matter is charred and then dowse with water. The biochar is then sprinkled on soil or added to your compost.

Earthworms are beneficial residents of the soil that do their work underground. As they move through the soil, they aerate it, leaving openings that allow air, water, and nutrients to reach the plant roots. In the process, they leave behind their castings, little mud-like piles deposited next to holes where earthworms burrow in the earth.

Worm Tea

Worm tea is a natural organic fertilizer for plants. It is simple and easy to make. All you need is worm castings that have been collected, a bucket, dechlorinated water, and a porous bag. There are several ways to collect worm castings. Worms migrate towards food and can be found around compost piles. Add fresh food where you want the worms (unclejimsworkfarm.com). Place the worm castings in the

porous bag in the bucket, cover with water, and let it steep overnight. The next morning the water should be light brown in color. The tea is now ready to use. Put the tea in a watering can or spritz bottle and use it to water your plants, including the leaves.

CHAPTER THREE

CREATING HABITAT

When we create habitat, we are providing a home for plants and animals. If you provide the right plants, the animals will come. Look at how nature does it. Instead of straight, manicured rows, there is a diversity of plants on all levels, including trees, shrubs, and herbaceous plants. There are plants that attract pollinators as well as host plants for the larvae, seed-producing plants for seed-eaters, and fruit trees and/or shrubs, all working together to provide a home for wildlife. Many of these plants that provide habitat for wildlife also provide food for us. If planned carefully, there can be enough for everyone.

Plant Communities

Plants don’t grow alone. Plants that have similar growing requirements in terms of climate, sunlight, moisture, soil, and elevation are going to find each other. They arrive in different ways. Wild berries are consumed by birds who deposit their seeds wherever they go. Nuts get buried and forgotten by squirrels. Other seeds are attached to a parachute and carried by the wind. Seeds from wild fruit trees and berries are dropped by birds, and other seeds get caught in the fur of animals. Sometimes they are brought in by humans, either intentionally or not.

The Forager's Garden

If we choose to use wild plants for food and medicine, it is our responsibility to make sure they have a place to grow. We must accept our role as caretakers of the earth.

BOTANY BASICS

Knowing plants is a prerequisite for using them as food and medicine. One must be able to recognize them in their natural environment, know who the look-alikes are, and understand what makes each plant unique and different from the others.

When approaching a plant, look at the whole plant and determine whether it is a tree, shrub, or herb. Tree seedlings may be confused with herbs, but even as a seedling the stem is woody.

All plants have roots, stems, leaves, and when given the right conditions, will bloom and produce seeds. Each part does something different.

Roots anchor the plant into the ground and absorb water and minerals from the soil that are transported to the stems and leaves. Extra food is stored in the roots.

Stems support the plant and provide the conduits for transporting water and nutrients from the roots and leaves. Herbaceous stems are soft and flexible and bend easily whereas the stems of trees, shrubs, and some vines are woody and hard.

Leaves are where the plant's food is made by capturing the sunlight and, through the process of photosynthesis, make food.

Flowers are the reproductive part of most plants. Once the flowers are pollinated, they produce fruits.

Fruits contain the seed. The seeds contain new plants and are dispersed in various ways for reproduction. If they land in the right place, they will germinate and grow into new plants.

Plants have personalities and energy fields that will tell you the condition of the plant. Avoid picking stressed plants. Look for those that are healthy and glowing.

GUILDS

A guild is a mini ecosystem that mimics a natural plant community with some human intervention. They include plants with similar growing requirements and that play a similar role in the environment. A guild is centered around a key plant that dominates that particular habitat, along with other plants and animals to form a community. They contain layers with a canopy, understory, shrub, and herbaceous layer. Mowing pathways around the individual guilds provides aesthetic value and provides a boundary. A guild, once established, requires little maintenance and comes back year after year.

Black Willow—*Salix nigra* (Salicaceae)

A guild made up of black willows is easily established in areas where there is ample moisture and partial sunlight. They are easily grown from cuttings. Seeds are dispersed by the wind and water and can be collected and scattered in the area where you want them to grow. Periodic thinning once they have germinated will prevent stagnation.

Black willow is a small to medium-sized tree that is found naturally along banks of streams and waterways where it stabilizes the banks and prevents the soil from washing away. It does well in wetland areas that are inundated with water for short periods of time.

Willow can be recognized by the long, lance-shaped leaves with finely toothed margins. Trees are dioecious with flowering catkins on the male trees in early spring.

Growing Willow

I found a low area in my field that collects water during a rainstorm. The soil is mostly mucky from the nearby swamp. I planted a circle of about eight willow trees about a foot tall and left them. Periodically I would take my clippers to remove invading vines, sweetgums, and red maples. Now, three years later, the trees are 10–12 feet tall and ready to harvest side branches for their bark.

Elder—*Sambucus canadensis* (Viburnaceae)

Elder is a deciduous shrub or small tree that grows at the edges of forests, fields, and in open areas near water, forming a large crown with its spreading branches. It spreads and forms a natural guild that can be maintained by mowing around the area where it has established itself. Flat-topped clusters of small, white flowers appear in late spring with five petals that are about one-fourth inch wide and mildly fragrant. Following the flowers are the purple-black berries, which ripen during the summer months. Leaves are pinnately compound with three to seven toothed leaflets growing in pairs with a terminal leaf at the top.

Elderberry syrup is valued for its use in supporting the immune system and as a flu preventive. Flowers have antiviral, diaphoretic, and diuretic properties while the fruits have antiviral, anti-inflammatory, and antioxidant activities (Kuhn & Winston, 2008).

I grew elder for years without much success. Lots of canes emerged in the spring, some flowers, but almost no fruits. I began looking to see where it grew naturally and produced the most fruits. Near the swamp in low, wet areas appeared to be its preferred habitat. I chose a spot that got lots of afternoon sunlight, near the swamp, and occasional standing water during a wet period. It was also an area that was thick with young saplings, vines, and grasses that had to be removed, all by hand. I used clippers to remove the saplings and vines and put down a thick layer of mulch and dried leaves to block the sunlight to prevent unwanted plant growth.

Once the elder was transplanted to its new location, it took off. It didn't take long to have a whole colony established, and by the third year it was producing fruits. In a short time, the elder had merged with the willow trees, creating a community of willow and elder.

Dr. Jim Duke always talked about looking for groundnuts in the elder patch. They grow well together. I went to the elder patch to see where to plant some groundnuts and soon realized I didn't have to! They were already growing there. In addition to the groundnuts climbing up the elder canes, there was also a naturalized patch of spearmint that had moved in, emitting a wonderful fragrance as you walked across it, plus the native St. Johnswort (*Hypericum punctatum*) and pennywort (*Hydrocotyle umbellata*). It was an entire community of plants with its accompanying wildlife.

Groundnuts—Apios americana (Fabaceae)

Growing in the elder guild are the groundnuts, a perennial climbing vine. I first heard about groundnuts soon after arriving in Virginia Beach and was working in a state park. Someone asked me if I was familiar with them, that they had been the mainstay of the American Indians and had helped the pilgrims survive their first winters here. Being a forager, I was intrigued that one plant could actually save people's lives and set out to find it.

After several unsuccessful visits to natural areas where it should be growing, I finally gave up and went for a walk on the property where I live. As I was skirting along the edge of the swamp, I spotted a vine growing up over the shrubs with pods hanging in clusters. I had found the groundnuts and it was the harvest season. I picked one and split it open. Inside was a row of seeds that looked like little green peas. I cooked some that evening and found that they also tasted like green peas.

Groundnuts are a native perennial and grow along the edges of waterways along the banks. I took a few of the tubers and planted them on the edge of the creek bordering the property where I live. They loved the spot and before long had established along the entire

length of that portion of the creek. Replanting is one way of extending the availability of an edible plant.

As it turns out, not every year is a good year for the pods. They do best if the summer season is wet and the area around where they are growing remains undisturbed. But the tubers are always there. The best time to locate groundnuts is in the summer when they have foliage or flowers. The leaves are compound with five to seven leaflets and wrap and climb over whatever gets in their way. The flowers are pea-shaped and maroon-colored and grow in clusters along the stem. The tubers grow in long strings just below the surface of the soil. The best time to harvest the tubers is in the fall after the plants have gone dormant. By locating the vines during the summer, you can trace them to the base and then, using a spade, dig gently. The only processing needed is to scrub them. Once they have been cleaned, they can be sliced and used in stir-fries or boiled like potatoes.

Groundnuts are a good source of carbohydrates and protein—they have three times more protein than potatoes. Cooking them before eating is recommended to remove the bitter latex. Tubers also contain genistein, a secondary metabolite that is also an anticarcinogenic compound (Deane, 1997).

Legumes

Legumes form their own guild simply by growing and spreading, taking over the area they are growing in. They are easily recognized in the wild because of their close resemblance to the many cultivated varieties that occur. There are many species of legumes scattered throughout the world and come in the form of trees, shrubs, lianas, and herbs. A common trait among all members of the Fabaceae or pea family is the fruit which is a pod and contains seeds. Many of these seeds are poisonous, especially when

eaten raw. However, there are also a number of legume plants that have edible seeds and pods when cooked. In some cases, the flowers can also be used safely. Among certain species, the tubers can be used as a starchy vegetable.

Legumes are known as one of the best plants for fixing nitrogen in the soil (Sun, Gardenia Creating Gardens). Nitrogen is a necessary nutrient for plants, along with potassium and phosphorous, and is responsible for chlorophyll and photosynthesis. Even though nitrogen makes up 80 percent of the volume of the atmosphere, it has to be transformed into a digestible compound before it can be used. Plants that have rhizobia bacteria that live on their roots are able to convert nitrogen from the atmosphere into nitrogen compounds for their own use.

Wild Beans—*Strophostyles helvola* (Fabaceae)

Wild beans are legumes that grew wild before they were cultivated and still grow wild when given the opportunity. They look similar to green beans because they are their ancestors. Compound leaves with leaves of three confuse some people who are seeing it for the first time, thinking it to be poison ivy. But the pea-like pinkish flowers and pods tell the difference.

I first discovered wild beans on a wild food outing on the Outer Banks of North Carolina in the early 1980s. The annual vine was growing out of pure sand, fully exposed to the salt air and ocean winds, and the beans were thriving. The vines were loaded with pods that we harvested and took back to prepare a wild bean salad. We shelled the beans first, and then boiled them for 15–20 minutes and used the cooked seeds in the salad.

I also harvested some dried pods to bring home to plant in my landscape. As the beans dry, they twist and pop open. Soon I had plenty of seeds to replant. I chose a dry, sunny area with mostly sandy soil to try to match the conditions they were growing in. I put stakes around it and called it the “No Mow Zone.” The beans took off. By the end of the summer the

vines were trailing across the field. Naturally resistant to bean beetles and to deer browsing, there was no shortage of beans.

It wasn't until September that the pods started maturing. I harvested what I needed and left the rest to return to the soil and to reseed naturally. Beans don't grow alone. Beneath the vines were the herbaceous plants: yarrow, plantain, sheep sorrel, and mullein, forming a community with the wild beans as the dominant plant.

Sumac—*Rhus* spp. (Anacardiaceae)

Sumac is a native shrub that is sought after by many foragers. It produces clusters of edible fruits that begin ripening in mid-summer and make an excellent tea that is cooling and refreshing.

Establishing a sumac patch is relatively easy. All it takes is one plant and they will quickly fill in an area. They can be aggressive but can be controlled with continued mowing.

Locating sumac can be a challenge. You may see it along the roadside in open, sunny areas. It is also found growing along the edges of fields. For many years I spent hours riding around looking for the right patch. They were either too close to the road and received all the exhaust fumes from vehicles, were at the edge of an agricultural field where they were exposed to pesticides and herbicides, or in an area that wasn't accessible. Tiny hairs that surround the seeds catch and trap particles in the air. Harvesting in a pesticide-free area is important.

Growing Sumac

Once I was able to turn my field into a foraging ground, sumac was one of my first choices.

I brought some sumac clusters home and tossed them into the compost pile, scattered them in my wild garden area, and forgot about them. A couple of years went by. The soil from the compost was being applied to the garden beds and used to pot up plants. Then one day I noticed I had baby sumac plants emerging. The seeds had germinated. The next step was to find the appropriate spot to transplant them. I was fortunate in that I had all three species coming up.

Growing sumac is relatively easy once you get it established. It will grow in most well-drained soils in either full sun or partial shade. The main thing is to make sure you have space. Sumac very quickly forms a colony wherever you plant it and spreads horizontal rhizomes far and wide.

Mixed in with the sumac were a number of native grasses, asters, elephant's foot, and other native wildflowers. Invasives tried to move in, but regular removal and clipping prevented succession from taking over. A community of plants had formed and with it the accompanying pollinators and wildlife.

The Berry Patch

Having my own berry patch saves me hours of driving and searching time looking for the wild berries. In the southeast, there is a long berry season, beginning in May with wild strawberries and continuing into the winter with rose hips and hawthorns.

Wild Strawberries—*Fragaria virginiana* (Rosaceae)

Growing in the shade of the blueberries and in between them are the wild strawberries. There is also a mock strawberry (*Potentilla indica*). Wild strawberries have white flowers when they bloom instead of yellow, as does the mock strawberry. The true wild strawberry looks like a strawberry and tastes like a strawberry but is smaller, with concentrated sweetness.

Wild Blueberries—*Vaccinium* spp. (Ericaceae)

Establishing a wild blueberry patch on my property was a top priority. Their native habitat is in moist areas near swamps or marshes with moderate to high acidity. They also occur in dry, sandy soil near the beaches, in the dunes, and in maritime forests.

Blueberries will grow in the shade of the forest but will produce more fruits if they get sunlight. Moist, well-drained soil, high in organic matter and very acidic, is ideal for growing wild blueberries. The area I chose was mostly sandy soil. Since blueberries like acidic soil, I added pine straw around the plants as mulch. Transplanting them to the new location was easy. Getting them to grow was difficult. They grew slowly. By the third year they were starting to bloom with only a handful of fruits. Each year the crop became more productive, and now, years later, I finally have my own patch of wild blueberries to pick from.

Mixed in with the blueberries are the partridge peas with yellow pealike flowers that are a nectar source for a number of pollinators and the host plant to the sulfur butterfly and elephant’s foot. Wild black cherry trees found a place along the edge of the blueberry community. They are an understory tree and do well along the edges. A whole community of wild

plants and their accompanying wildlife had developed around the blueberry bushes.

Wild Black Cherry—*Prunus serotina* (Rosaceae)

Wild black cherry trees are planted by birds eating their fruits and depositing the seeds and are distributed over most of the eastern half of the United States. They are volunteers in gardens, lawns, fence rows, and forest edges. They grow in full sun or part shade. At the hottest, driest time of the year, you get your sweetest, juiciest berries.

Nut Trees

The cooler autumn air brings with it a change in leaf color accompanied by nuts maturing and dropping to the ground. I wanted nut trees in my landscape. As it turns out, I didn't have to plant them. The squirrels planted them for me. Black walnut and hickory trees have both volunteered in my field. If there are nut trees in your vicinity, and you have squirrels, you probably have nut trees coming up in your yard or garden. Depending on how much space you have, you can incorporate them into your landscape.

True nuts are characterized by a single seed, a hard shell, and a protective husk that can take different shapes. Common nuts in the eastern US include acorns, hazelnuts, beechnuts, walnuts, hickory, and chestnuts.

Oaks—*Quercus* spp. (Fagaceae)

Acorns are the nut of oak trees and have a cap with a pointed tip and a scaly cap at the base for their outer hull. Oak trees form a canopy in a mature, hardwood forest and are often planted in yards to provide shade.

Beech—*Fagus grandifolia* (Fagaceae)

The beech tree is a tall tree in the canopy of the mature, hardwood forest. The fruit is a triangular nut encased within a spiny bur-like outer hull. Two nuts are usually found within a single bur. Even when fully developed, the nut is only about one-half inch long. Beeches often grow in bottomland forests with oaks and hickories.

Black Walnut—*Juglans nigra* (Juglandaceae)

Walnut trees produce a nut that has a green outer husk enclosing a nut that looks like a brain and is, according to Jim Duke, brain food. It is the best source of serotonin in the plant world in this country. Serotonin is a mood elevator. Avoid planting black walnut trees near your garden vegetables. This is due to the juglone in the roots that is toxic to many plants and may kill them (Brown, 2016). This mainly applies to the garden vegetables and doesn’t seem to affect the wild plants.

Black walnuts grow in the eastern half of the United States in a variety of sites. They are large trees with compound leaves consisting of seven to nineteen toothed leaflets that turn yellow in autumn. The fruit is a thick-shelled nut with ridges enclosed in a green husk that begins dropping to the ground in mid-September. The walnut husk remains unsplit when the mature walnuts drop, unlike hickories and pecans, whose outer hull split open at maturity, releasing the nut.

Walnuts come up easily from seeds planted in the ground. Many get planted by squirrels in the fall who forget about them. Others come up where they have dropped and been left on the ground. Walnuts can be transplanted as seedlings in direct sunlight.

Chinkapin—*Castanea pumila* (Fagaceae)

Chinkapin is a thicket-forming shrub or small tree that produces nuts that have a prickly husk with needle sharp spines enclosing a single, shiny, dark brown nut. Chinkapins are found in the southeastern United States, from New Jersey south to central Florida, often in mature oak-hickory forests.

Chinkapins are moderately resistant to the chestnut blight that wiped out the American chestnut. Chinkapins grow best in dry, acidic, welldrained soil in partial shade or sun (NC State Extension).

Hazelnut—*Corylus americana, C. cornuta* (Betulaceae)

Hazelnut produces a light brown, roundish nut enclosed in a leafy husk. For best nut production, the shrub should be grown in full sun in moist, well-drained soil.

My first hazelnut sighting came while paddling with friends on a waterway near Virginia Beach in late summer. At one of our stops, when we got out to explore the surrounding area, we found a patch of hazelnuts. I was impressed with the leaflike husk that partially enclosed the nut. I took a nut home with me, put it in a pot, and set it outside for the winter. When spring approached, I started watching the pot to see if anything would come up. Several times I dug down into the soil to see if the nut was still there and if it was sprouting yet. Finally, I saw the sprout, then the shoot. I planted the shoot in well-drained soil and now, years later, a colony of hazelnuts has developed and established themselves.

The Briar Patch

If you’re thinning out an area and removing unwanted species, look out for those with thorns. If it has thorns, it’s probably edible or medicinal. Hawthorns, crabapples, and rose hips are all thorny plants with apple-like edible/medicinal fruits.

Finding native **hawthorns** and **crabapples** growing wild is rare. Even more rare is finding them with fruits. Cultivated varieties of both hawthorn and crabapple are commonly grown, but the true natives are preferred. There are several species of hawthorn that are native, and I had several growing on my property. They were growing in the understory of the forest but will produce more flowers and fruits if they get more light.

Hawthorn—*Crataegus* spp. (Rosaceae)

Hawthorn is a small, deciduous, understory tree with thorny stems that grows in moist soils. Leaves are sharply toothed and three-lobed. It blooms in late spring with flowers that have five white petals followed by a fruit that looks like a miniature apple and turns shiny red when it ripens in the fall.

Hawthorn needs full sun and moist, loamy soil with good drainage to produce flowers and fruits. Provide hawthorn with plenty of moisture for the first couple of years. They can be successfully transplanted to your landscape in full sun and moist soil with success. The fruits attract songbirds, turkeys, foxes, rabbits, squirrels, and other mammals.

Crabapples—*Malus sylvestris* (Rosaceae)

Crabapples are a native understory tree that is armed with stout thorns on the branches and trunks. They grow in the understory of the forest or along the edges of fence rows or abandoned fields where they sometimes form thickets. Crabapples bloom in the early spring with pink, fragrant flowers, making them popular in landscapes. There are only about four native species in North America, but lots of cultivated varieties.

Southern crabapple (*Malus angustifolia*) is native to the southeast. It has declined in recent years as a result of loss of habitat. Southern crabapples require full or partial sunlight for more blooms and fruits. They will grow in

the shade of the forest but will produce few, if any fruits. They grow best in well-drained, moist, and acid soils along stream banks, edges of forest, and fence rows and old fields.

Crabapples can be transplanted to your landscape but have to be nursed along for the first couple of years until they are fully established. Starting them in a pot can help them establish a good root system before putting them out.

Wild Rose—*Rosa* spp. (Rosaceae)

Roses are uplifting and a symbol of love and beauty. They can help soothe a broken heart, anger, or grief. If space allows, they should be included in any landscape.

Roses are shrubs armed with stout, hooked thorns on branches and stems. Leaves are compound with five to seven toothed leaflets. They bloom in late spring with fragrant pink or white flowers with five petals and yellow center stamens. The wild roses generally have a stronger scent than cultivated varieties. The fruit is a hip and turns red when it ripens in late fall.

There are both native and non-native species of roses. Grow natives when you can. There are more than 500 species of rose that grow in a variety of habitats and environments. They grow best in full sun and prefer acidic soil high in organic matter. They tolerate partial shade but will produce more flowers in full sun. Bees, butterflies, and other pollinators are attracted to the fragrant-smelling flowers. Birds feast on the fruits when they ripen in late fall and winter.

Welcome Weeds

"Your weeds look pretty," commented my eighty-three-year-old country neighbor after she had walked around my yard a few times. I couldn't help smiling. She had lived all her life on a farm where there had been an ongoing battle between the landowner and the weeds—a battle using all the modern day weapons, from tilling to mowers to chemical herbicides and crop dusting. The challenge became finding wild edible plants and hoping they had a chance to mature to the eating stage before getting mowed or sprayed. What the plants needed was a safe place to grow. My yard and garden soon became that place.

GETTING STARTED

Establishing an area to grow weeds is the first step. I began in my garden in the early spring by turning the soil over and then observing which plants came up naturally without actually planting anything.

Thousands of tiny seeds lie dormant in the soil just waiting until it is disturbed by tilling or digging, and then they germinate. These annuals represent the first stage of succession, when one plant community is replaced by another over time. I also noticed ragweed, crabgrass, and foxtail grass. These I hand pulled as they came up. Otherwise, they would crowd out and replace the annuals, preparing for the next stage of succession.

Fire!

Fire is a part of life and can be included in the landscape as a management tool. Slash-and-burn was used by indigenous people in the southeast to burn their agricultural fields in late winter to prepare them for spring planting. Likewise, on the farm where I grew up, we did the same thing, a practice that was probably passed down by the indigenous people who lived there prior to the settlers. Toward the end of winter, we would build a huge brush fire in the woods, using cleared branches, downed trees, and brush in general. The fire was built with the creek nearby and buckets to haul water if the fire got out of control. We would spend all day working the fire, raking away any dried branches or leaves that might ignite from a stray spark. This was killing off weed seeds and preparing the seed bed for the seedlings that we would be planting in the spring, including tobacco, tomatoes, and peppers.

Pollinator Gardens

All plants, when given the right conditions, will bloom. Flowers are necessary to attract pollinators. Pollination, the transfer of pollen from one flower to another, is a necessary process for the plant to produce fertile seeds contained within a fruit. Plants rely on this process for reproduction, and we rely on it for food, wild as well as cultivated. Insects, including bees, wasps, moths, butterflies, flies, and beetles are the primary pollinators.

Flowers use different strategies to attract pollinators for reproduction. Some use visual cues, including color, size, shape, and nectar guides. Some flowers are sweet tasting, bitter, sour, or spicy, while others have no taste. Some, but not all, flowers are edible or medicinal.

SENSORY CUES

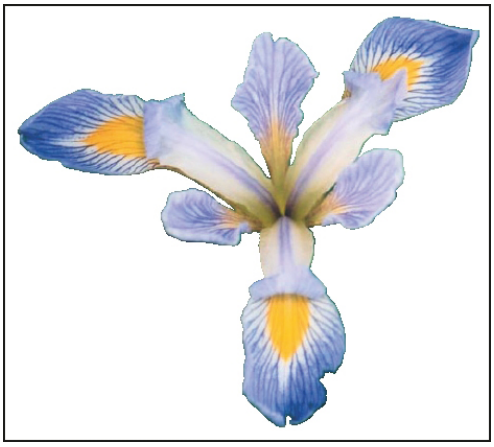
Plants have developed various ways to attract pollinators to visit them. Sight, color, scent, and shape all play a part in what insects visit them.

Showy flowers of mallows and milkweed attract a variety of butterflies.

Color is used by flowers to lure pollinators to them. Violets are a deep blue-purple with no scent. They taste mildly sweet. Red or yellow flowers attract butterflies and hummingbirds. Beebalm and cardinal flowers bring in hummingbirds in addition to butterflies and moths.

Scent is used by night bloomers. Evening primrose blooms in the evening, using scent and light color to attract night-flying insects, and is pollinated by hawkmoths.

Nectar guides on the blue-flag iris lead pollinators to the nectar.



Shape determines which insects can feed on the nectar. The tubular-shaped flowers of coral honeysuckle and native azaleas allow hummingbirds, with their long, pointed beaks, to sip the nectar at the base of the flower. The large flowers of mallows give insects a resting perch while they forage.

Butterfly Gardens

With the decline in the butterfly population, more people are taking an interest in growing plants for butterflies. Butterflies add beauty and color to the landscape with their bright colors. They are also attracted to bright flowers and the nectar produced by them. In the process of collecting pollen and going from one plant to another, they are pollinating the plants, allowing them to produce fruits.

When growing plants for butterflies, provide them with what they need to reach maturity and reproduce. Butterflies are picky and some will only lay their eggs on specific plants. Include plants that attract a diversity of pollinators, providing pollen and nectar for hummingbirds, bees, wasps, moths, butterflies, flies, beetles, as well as host plants to lay their eggs on.

Puddling is an activity that butterflies engage in to obtain their salts and minerals. Puddling takes place in puddles where there is standing water.

Providing puddling sites for butterflies can include birdbaths, shallow basins of water, or just keeping an area moist.

Water Gardens

Bringing water into the landscape adds a new dimension. A water garden doesn't have to be elaborate. It is a place where you can grow plants that like it wet. Anything that will hold water will work. It might be as simple as a potted plant placed in a container of water or a dug-out pond in your landscape. Both will support wetland plants.

My first water garden was initiated quite a number of years ago when I was asked to do a program on marshes for a class in an elementary school. When I thought about how to present it, I decided to put together a real marsh using live marsh plants. Using a Rubbermaid tub, I went down to the marsh and dug up samples of dominant plants in the marsh including the muck in which they grew. After the class I put the tub outside by the back door. That was in the fall. I left it over winter, and the next spring went out to check on it. The plants had been growing all winter and were bursting out the edges. Time for a bigger tub.

I began thinking about how to expand the marsh and came up with a kiddy pool. I built up about a third of the pool with peat and muck from the swamp, held in place by decaying logs, thus creating a bog. The rest of the pool I filled with water and turned the pool into a pond. In the bog I planted cranberries, groundnuts, and sweetflag. I thinned out some of the arrowhead and pickerelweed plants from the tub and placed them in the pond in the water. A number of volunteers whose seeds were in the mucky soil made their appearance.

In a short time, the bog and the pond were both filled with plants. Frogs and turtles took up residence and a small wetland community was established.

Turning a kiddie pool into a miniature marsh is fairly easy. All you need is a layer of muck on the bottom, a few thin branches to allow for drainage, and plants. When selecting plants, choose those that like to keep their feet wet. Some prefer shallow water while others grow out of the mud. The main thing is to not let them dry out.

Arrow Arum—*Peltandra virginica* (Araceae)

Arrow arum is a native perennial found in wet bogs and is easily transplanted into a pond or pool in full sun. They have large, heart-shaped leaves and grow from an underground rhizome. It has a spadix for flowers

followed by seeds that have a gelatinous coating that enable them to float downstream when in water.

Arrowhead—*Sagittaria latifolia* (Alismataceae)

Also referred to as duck potatoes or wapato, arrowheads are widely distributed, especially in the East. Not all of them have arrowhead-shaped leaves; some species have linear or lance-shaped leaves that emerge from the roots in shallow freshwater marshes. The flower stalk arises from the same root system with no apparent leaves. Flowers with three white petals grow in whorls of three on the stalk and are followed by a greenish ball, also in whorls of three. Roots extend out from the base of the plant, sometimes up to two feet, with edible tubers that develop on the ends.

Blue Flag Iris—*Iris virginica* (Iridaceae)

Blue flag iris is a perennial wetland wildflower that makes a beautiful water plant in the garden, even when it's not in bloom. It has long, swordlike leaves with a showy, violet-blue flower in the spring. It prefers rich, moist soils in full sun. Blue flag iris is easily propagated by division of the underground rhizome.

Cattails—*Typha latifolia* (Thyphaceae)

One of the most familiar and also common plants of the marsh is the cattail (*Typha* spp.). They are easily recognized by their long, swordlike leaves with yellowish-brown male flowers that form a spike above the female

flowers that develop into the brown seed spike characteristic of cattails. Near the base of the plant, just beneath the muck, is a small white sprout that has already started developing for next year's growth. Buried even deeper in the mud is the underground rhizome. Cattails are easily grown in backyard ponds or pools. They are good to help purify water.

Pickerelweed—*Pontederia virginica* (Pontederiaceae)

Pickerelweed makes an attractive addition to a backyard pool or pond. It has long, glossy green heart-shaped leaves that emerge above the water. In early to mid-summer it produces a flower stalk with a spike of deep blue flowers followed by seeds that are a food source for ducks.

Rose Mallow—*Hibiscus moscheutos* (Malvaceae)

At the peak of summer, when the sun's rays are the most intense and the temperatures climb to record highs, the mallows bloom. The marshes are dotted with pinks and whites of several species of the mallow family. Native mallows can be found in the marshes and are easy to establish in a pond area or kiddie pool.

Rose mallow is a large, herbaceous perennial, reaching heights of three to eight feet by the end of the summer. From July to September, it produces large, showy flowers, with usually white but occasionally pink petals.

Following the flowers are the fruits, which are five-parted capsules containing seeds within the chambers. Young fruits are tender and mild tasting, similar to okra, and can be added to salads, stir-fries, or cooked vegetables.

Sweetflag—*Acorus calamus* (Araceae)

A wetland emergent plant that grows 2 to 3 feet tall in freshwater marshes with long, stiff, sword-like light green leaves. Tiny, greenish-yellow flowers develop on a spadix that resembles the leaves. All parts of the plant have a sweet aromatic taste and scent.

Water Hyssop—*Bacopa monnieri* (Plantaginaceae)

I first discovered bacopa growing as a creeping mat across the marshes. At first, looking at the succulent leaves that were rounded at the tip, I thought it was purslane. But then I saw the flower—a small white flower, not yellow like purslane. When I looked it up, I discovered it was bacopa. I didn't know a lot about bacopa at that time, but gradually studies started coming out showing its ability to improve cognitive skills, and it turns out it has been used in India for many years. I brought it home and put it in my kiddie pool where it now thrives.

VERNAL POOLS

Vernal pools are miniature wetlands that develop from snow melting in the spring or heavy rainfall in late winter or early spring. A lowlying area that has standing water after a rain and then dries up for a period of time is a vernal pool. As summer approaches, these areas dry out, preventing fish from being able to live there. However, they provide the perfect habitat for frogs and salamanders to lay their eggs, leaving behind a gelatinous mass. These areas can be turned into wetlands by digging out around them and letting them fill naturally with collected rainwater.

There are indicator plants that will inform you of how moist or dry the soil is. An area may look dry until it rains and suddenly it has become a shallow pool. Rushes, cattails, pickerelweed, pennywort, and mallows are all indicator plants for wetlands.

Rain Gardens

Rain gardens use native plants to collect rainwater from roofs, gutters, and pavement, eliminating soil erosion. Each site is unique with varying soil permeability and drainage, and the volume and velocity of water flow. A rain garden is a shallow depression that becomes a ponding area where water that has drained from a roof or other building is stored until it has percolated into the soil. A hardwood mulch will allow greater surface area for absorption and will help prevent water runoff. A planting soil that includes leaf mulch, sand, and topsoil filters pollutants out of the water by the plants that are installed in the area.

Rain gardens are much like a riparian forested buffer and help to improve water quality. Plant species selected should include those that can tolerate extreme conditions, including very wet and very dry. They are going to vary depending on your location. Most riparian plant species do well in rain gardens.

Rain gardens can be placed wherever there is water run-off or where water collects for a period of time.

There are three main planting zones from the lowest being the wettest and the higher edge the driest.

RAIN GARDEN PLANTS TO GROW

Ferns

Chain Ferns, Virginia Chain &
Netted Chain Ferns (*Woodwardia* spp.)
Christmas Fern (*Polystichjum acrostichoides*)

Lady Fern (*Athyrium asplenioides*)
Log Fern (*Dryopteris celsa*)
Royal Fern (*Osmunda spectabilis*)
Sensitive Fern (*Onoclea sensibilis*)

Herbaceous Plants

Asters (*Symphyotrichum* spp.)
Asters Salt-marsh (*Symphyotrichum subulatum*)
Beebalm (*Monarda didyma*)
Black-eyed Susan (*Rudbeckia* spp.)
Blue-eyed Grass (*Sisyrinchium angustifolium*)
Boneset (*Eupatorium perfoliatum*)
Butterflyweed (*Asclepias tuberosa*)
Goldenrod (*Solidago* spp.)
Joe-pye-weed (*Eutrochium* spp.)
Milkweed (*Asclepias* spp.)
Rose Mallow (*Hibiscus moscheutos*)
Sundrops (*Oenothera fruticose*)
Turtlehead (*Chelone glabra*)
Virginia Strawberry (*Fragaria virginiana*)

Shrubs

Azalea (*Rhododendron atlanticum, R. viscosum*)

Arrowwood (*Viburnum dentatum*)
Blueberries (*Vaccinium* spp.)
Buttonbush (*Cephalanthus occidentalis*)
Red Chokeberry (*Aronia arbutifolia*)
Sweet Pepperbush (*Clethra alnifolia*)
Sweetspire (*Itea virginica*)
Black Haw Viburnum (*Viburnum prunifolium*)
Inkberry Holly (*Ilex glabra*)
Waxmyrtle (*Morella cerifera*)
Wild Azalea (*Rhododendron atlanticum, R. viscosum*)
Winterberry Holly (*Ilex verticillata*)

Trees
Serviceberry (*Amelanchier* spp.)
Pawpaw (*Asimina triloba*)
Redbud (*Cercis canadensis*)
Yaupon Holly (*Ilex vomitoria*)

(Plant HR Natives, 2016).

Shade Gardens

Shade gardens are a place to relax, get out of the sun, and enjoy nature. They provide habitat for plants that are intolerant of a lot of sunlight and are desirable to include in the landscape. Trees are a wonderful addition to a yard and provide natural shade. A shade garden encircling a tree provides a

place for shade-lovers to grow. An adjacent building, if you live in an urban area, casts shadows and creates shade.

Moss Gardens

Mosses belong to a group of bryophytes, non-vascular plants with no roots or vascular tissue. Instead, they absorb water and nutrients from the air. Since they have no roots, they can grow where other plants cannot. They thrive in damp, shady environments, but they can also be found in dry, sandy soil.

Moss gardens provide habitat for beneficial insects, salamanders, and frogs. Other than being picked at by birds for building their nests, they are resistant to insect garden pests, squirrels, and deer.

If you have a shady area in your landscape where everything is shaded out, try growing moss. Start by clearing the ground of debris where you want the moss to grow, and loosen the soil. Moss spores are spread by air, and if there's moss already growing nearby, it's likely the spores will find their way to the cleared area. If moss is already present, encourage it to grow by pulling out grass and weeds growing around it. Otherwise, you can introduce moss to your landscape and maintain it to keep the grass and other weeds out.

LOCATING AND HARVESTING MOSS

Moss grows naturally in the shade of the forest. The best time to look for it is after a rainfall. Unless it's your own forest, be sure to get permission from the owner before harvesting. If it is your property, harvest conservatively. To harvest moss on a flat surface, use a trowel or flat shovel and scrape the moss from the soil where it is growing. Take small amounts from each patch of moss, leaving behind plenty to repopulate. After all, you may want to come back again.

Patches of moss often appear in lawns if it is moist and shady enough. These patches of moss can be encouraged to grow by mowing low and

keeping it moist. It sometimes establishes itself on rooftops. If so, remove it and put it where you want it to grow.

Not all mosses are green all the time. Changes in moisture, sun exposure, or reproductive stages all affect the color.

GROWING MOSS

If you have a damp, shady area in your landscape where nothing will grow because of the shade, grow moss. Moss has rhizoids, not roots, that serve to anchor the rhizomes into loosened earth and to absorb water and nutrients from the soil. Moss can be laid right on top of the soil and walked on. It also makes good edging on rocks or bricks. Moss grows in a wide range of conditions. It works well to fill in the cracks between stepping stones or in a circle around a tree.

There are different species of moss. Most will turn brown and dry up if over-exposed to the sun. Even those in the shade will dry out if there's not sufficient moisture. Generally, once they are watered, they come back to life.

USING MOSS

Mosses have been used for various uses. Sphagnum was used for baby diapers. It was also used for bandaging wounds in wartimes due to its antiseptic properties.

COMMON MOSSES TO KNOW AND GROW

Broom Moss—*Dicranum* spp. (Dicranaceae)
Broom moss has lush, yellowish to dark green wispy leaves that bend in the same direction. It grows best in partial sun to medium shade and acidic soil.

Fernleaf Moss—*Thuidium* spp. (Thuidiaceae)
Fern moss is easy to identify. It looks like tiny ferns. The branches are longer and become shorter toward the tips. Instead of standing straight up, they lean over.

Haircap Moss—*Polytrichum commune* (Polytrichaceae)
Haircap moss is a perennial evergreen that forms moderately dense colonies in moist soils in forest, fields, and bogs and is tolerant of dry conditions. It has stiff leaves along the stem that can be either erect or sprawling.

Juniper Haircap Moss—*Polytrichum juniperinum* (Polytrichaceae)
Juniper haircap moss grows in a range of habitats and is tolerant of dry conditions. The leaves are long and rigid and look like miniature evergreen needles.

Peat Moss—*Sphagnum* spp. (Sphagnaceae)
Sphagnums, or peat mosses, are made up of a large group of shaggy-looking mosses that are light green to bright green in color. Sphagnum grows naturally at the edges of swamps, bogs, and wet areas. It grows well in pools or shallow ponds.

Peat moss is probably one of the most popular mosses and is often used by gardeners to wrap the roots of plants to keep them moist until they can be planted. It is also antiseptic and absorbs water and was used for bandages during WWI.

Pin Cushion Moss—*Leucobryum glaucum* (Leucobryaceae)

Grows on thin soil in damp to dry forests, clearings, and road banks.

Starburst Moss—*Atrichum angustatum* (Polytrichaceae)
Starburst moss is named for its appearance. It looks like bursts of stars and grows in moist to dry soil of wooded slopes, old fields, road banks, clearings, and lawns.

Worm Moss—*Bryoandersonia illecebra* (Brachytheciaceae)
Worm moss is found in dry forests, old fields, and clearings.

Small Plot Gardens

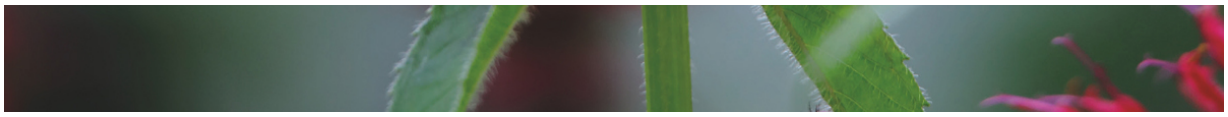
It doesn't take a lot of space to grow food and medicine. If you have a yard of whatever size and you mow grass, you have the potential for food. Instead of growing grass, let the wild plants grow. You will need to remove the grass in the area you want to grow wild and then see what comes up on its own. You can then add to it by acquiring plants at native plant sales or relocating them from nearby areas.

CONTAINER GARDENING

If you are wishing to grow wild edible or medicinal plants and don't have outdoor space, a balcony, porch, deck, or even a windowsill can provide the space needed for container gardening. You may have a lawn but don't necessarily want to turn it into a wild garden or the soil may not be right. All you need to grow an edible salad garden is a pot of organic garden soil. You can put it on a windowsill or any sunny spot and water it regularly. Seeds that have been carried by the wind or dropped by the birds are in the soil. Or you can collect wild annual seeds and plant them.

Plants growing in containers often get more attention than those growing in the wild. If they are sensitive to cold weather, they can be brought inside during the winter or moved to a protected area. They can also be moved to other areas depending on the lighting.

The choice of containers is unlimited. It’s an opportunity to recycle whatever will hold soil and plants. If you don’t provide the plants with a container, they will make their own. Plants are pretty versatile and want your attention. If a plant comes up where you don’t want it, relocate it to an area that is more suitable.



CHAPTER FOUR
NATIVES IN THE LANDSCAPE

Native plants are adapted to the growing conditions and are naturally disease and insect resistant. They do best with no fertilizers, unless the soil is depleted, in which case a layer of compost and leaf mulch works well. If you choose the right plant and match it to the right environment, the plant will thrive.

Who Are the Natives?

Native plants are described as those plants that were growing here when the settlers first arrived. They either occur there naturally or have occurred there in the past. The plants evolve with the wildlife, geology, soil, and climate of the region (Rosenbaum, 2023). They have adapted to the growing conditions and require little, if any, maintenance. However, environmental conditions have changed. Nothing stays the same. New plants move in, others disappear. Douglas Tallamy in his book *Bringing Nature Home* (2007) suggests that a plant can only function as a true native when interacting with the community that historically helped shape it.

I went to my first native plant sale in the mid 1980s, hosted by the recently formed native plant society. It was at the same time that I was installing a native wildflower garden in my yard, and I was looking forward to increasing my collection. I came away feeling disappointed. There were very few straight natives. They had been purchased from local nurseries as cultivars. While it had the same genus and the same species, there was a more descriptive name following it, and they didn't look like any plants I had seen growing in the wild.

Straight natives are plants that occur in the wild and reproduce either by seed or underground roots without human intervention.

Cultivars are plants that have been selected for a certain trait, whether it be flower color, fruit color, size, shape, or some other characteristic. They can be developed from non-native plants or native plants.

Nativars are those plants that have been selected from native plants for specific desirable traits for a garden or landscape (Missouri Prairie Foundation).

Benefits of Native Plants

Co-evolution has taken place over thousands of years between plants, animals, and people. The nutritional value of leaves, nectar, pollen, fruits, and seeds of native plants is known from their use by indigenous people and the wildlife in the area for thousands of years.

Including natives in the landscape offers many benefits, such as a diversity of both plants and animals. Plants interact with other plants, microbes in the soil, animals, and humans, creating a community of plants and animals. They have evolved together. The interactions help to shape the evolution of plants and animals in a particular place, forming a community.

People spend hours mowing lawns, pulling weeds, and manicuring their landscape for that picture-perfect lawn or garden. Instead of growing grass, grow natives. A wildflower meadow, herb and vegetable gardens, and fruit trees can be planted in a lawn, adding aesthetics to the landscape and attracting pollinators, birds, and other wildlife. Native plants have fewer pests and disease problems than non-native species and come back year after year, reducing replacement costs.

PLANT METABOLITES

I first heard about plant metabolites at Jim Duke's lecture on Medicinal Plants at the Wintergreen Wildflower Symposium in 1992. Metabolites occur in all plants for the process of breaking down and building up molecules for growth and development. There are primary and secondary metabolites.

Primary metabolites are those chemicals that allow plants to capture energy from the sun and turn it into new tissues. These are consistent across the plant kingdom (Tallamy, 2007).

Secondary metabolites, however, are different. At one time they were regarded as waste products of a plant's metabolism (Pengelly, 2004). Each leaf has a vast array of chemical compounds that differ in each species. No two leaves have the same chemistry. These are the compounds that give plants a unique taste, digestibility, and toxicity (Tallamy, 2007). Most scientists agree that these compounds serve as a defense against grazing animals, herbivores, and insects.

Dr. Duke believed that these compounds are medicine for us. Through hybridization and selective breeding, these compounds were removed from the plants to improve the taste, size, and appearance. In doing his research on cancer prevention, Dr. Duke discovered that many of these secondary metabolites were cancer preventives. When the USDA asked how to put these compounds back into the plants, he told them, "You can't. Go to the wild plants. They haven't been tampered with" (Duke, 1992).

PLANT SECONDARY METABOLITES

Glycosides are widely distributed in the plant world and occur in pulses, swollen underground roots, flowers, and leaves. They are found in members of the Brassicaceae, Rosaceae, Scrophulariaceae, Asteraceae, and Polygonaceae families (Pengelly, 2004).

Phenols are widespread among all plants. Simple phenols are bactericidal, antiseptic, and anthelmintic (Pengelly, 2004). Thymol and carvacrol are major monoterpene phenols. Horsemint (*Monarda punctata*) is a native herbaceous plant and one of the best sources of thymol and carvacrol (Duke, 2007). Phenols also include tannins found in oaks and hickories.

Terpenes are aromatic, organic compounds that give plants their scent, mainly to repel predators and attract pollinators in the wild (Freedman,

2021). They are widespread in nature, mainly as constituents of essential oils and can be used as flavors, drugs, and fragrances. Each terpene has its own scent, defining smell and taste (Freedman, 2021).

Alkaloids are organic compounds found in 15–30 percent of all flowering plants, including Fabaceae, Liliaceae, Ranunculaceae, Apocynaceae, Solanaceae, and Papaveraceae and may occur in roots, rhizomes, leaves, bark, fruit, or seeds. Caffeine and berberine are the most widely occurring alkaloids. Alkaloids are found in many of the well-known poisonous plants and have been widely used in pharmaceutical medicines (Pengelly, 2004).

Plant, Animal, and Human Relationships

There has been a lot of interest in providing habitat for wildlife. It is time to expand that thinking to include the human species into our native plant gardens. Those secondary metabolites that protect the plants from predators and disease are medicine for us.

Many people strive to live in a bug-free environment, engaging in a continuous battle with ants, bees, wasps, flies, hornets, and weeds. Individual farmers, homeowners, and agencies spend thousands of dollars each year on insecticides and herbicides to eliminate crop pests and weeds. In the process of eliminating insects, we are also eliminating the pollinators, which are necessary for the production of many of the fruits and vegetables that we eat.

Pollination, the transfer of pollen from one flower to another, is a necessary process for producing food and for the plant to produce fertile seeds contained within a fruit. Plants rely on this process for reproduction, and we rely on it for food, wild as well as cultivated.

Pollinator Plants

Most flowering plants are a nectar source for some insect. Not only are the pollinating insects coming to the plants for nectar, but they are also

attracting their predators, including birds and larger insects. This is necessary for our native fruit trees to produce fruits that in turn provide food for the fruit-eaters.

Many of these plants are also host plants. Native plants need native insects and native insects need native plants, both as host plants to lay their eggs on and as nectar sources for food. It's a partnership that has been evolving over a long period of time. A number of adaptations have been developed by plants to attract insects to them. A diversity of plants will bring in a diversity of butterflies.

NECTAR PLANTS

Asters—*Symphyotrichum* spp. (Asteraceae)

Asters are showy. Butterflies love color, especially purple. Pink or purple daisy-like asters are a treat for butterflies. There are over 100 native asters that burst into bloom in late summer and into the fall, providing a necessary nectar source for pollinators when other nectar sources have gone to seed. Asters thrive in full or partial sunlight, and some even in the shade.

Beebalm—*Monarda didyma* (Lamiaceae)

Beebalm is showy with its red, tubular flowers at the top of its square stem. It is one of the favorites of hummingbirds, butterflies, and hawkmoths.

Black-eyed Susan—*Rudbeckia hirta* (Asteraceae)

The showy, yellow flowers with dark centers attract swallowtails and other butterflies. They are easy to grow and will attract many pollinators to your garden.

Cardinal flowers—*Lobelia cardinalis* (Campanulaceae)

The bright red tubular flowers provide an excellent source of food for hummingbirds who use their long, pointed beak to probe into the tubular flowers.

Coneflowers—*Echinacea purpurea* (Asteraceae)
Coneflowers are a treat for butterflies. It is a long-blooming plant with pinkish-purple flowers with purplish-brown disc flowers in the center.

Coral Honeysuckle—*Lonicera sempervirens* (Caprifoliaceae)
Coral honeysuckle is loved by hummingbirds. The tubular shape of the flower is perfect for the beak of the hummingbird.

Elder—*Sambucus canadensis* (Viburnaceae)
The flat-topped clusters of white, fragrant flowers of elder give bees a place to rest while collecting nectar and pollen.

Evening primrose—*Oenothera biennis* (Onagraceae)
The flowers of evening primrose open in the evening and are pale yellow in color but fragrant. The odor and the light-colored flowers attract the night-flying sphinx moths upon which the plant depends for pollination.

Garden Phlox—*Phlox paniculata* (Polemoniaceae)
Garden phlox is a native perennial that adds color to your garden most of the summer and attracts butterflies and hummingbirds.

Goldenrod—*Solidago* spp. (Asteraceae)
Goldenrod blooms late in the summer, providing the last of the nectar and pollen for bees for the season. It attracts pollinators, including butterflies, with its showy, nectar-rich flowers.

Hercules Club—*Aralia spinosa* (Araliaceae)
Also referred to as the Devil's walking stick, Hercules Club is a magnet for pollinators. The flowers attract bees, butterflies, and other pollinating insects. Hercules club is also a host plant for members of the Asteraceae family.

Horsemint—*Monarda punctata* (Lamiaceae)

Horsemint, also called horsebalm, is in the mint family. It blooms in late summer with yellowish, purple-dotted flowers that attract bees and other pollinators.

Joe-pye-weed—*Eutrochium* spp. (Asteraceae)

Joe-pye-weed is a perennial wildflower that reaches two to five feet tall. Whorls of three to four lance-shaped leaves grow on a slender stem topped with a cluster of whitish-pink flowers that attract lots of butterflies and other pollinating insects. It grows at the edges of streams and waterways in partial sunlight.

Mountain Mint—*Pycnanthemum muticum* (Lamiaceae)

If you want pollinators, grow mountain mint. As soon as the flowers appear, the plant starts humming. Butterflies, bees, wasps, and other insects cover the plant to sip on the copious amounts of nectar that are produced. Terminal clusters of whitish to pinkish flowers are highlighted by a pair of showy, silvery leaf-like bract located near the base of the cluster (Native Plant Trust, 2025).

Obedient Plant—*Physostegia virginiana* (Lamiaceae)

Hummingbirds and butterflies are attracted to the late-blooming flowers of obedient plant.

Passionflower—*Passiflora incarnata* (Passifloraceae)

If you want to attract the gulf fritillary butterfly, plant passionflower. It is the only host plant for the fritillary caterpillar. The flowers attract a variety of butterflies to feed on their nectar. When selecting the passionflower, make sure it is the native one, either *Passiflora incarnata* or *P. lutea*.

Pawpaw—*Asimina triloba* (Annonaceae)

The flowers of pawpaw have a pungent odor to attract carrion flies and scavenger beetles for pollination.

Rose Mallow—*Hibiscus moscheutos* (Malvaceae)

During the summer the marshes are dotted with pinks and whites of several species of the mallow family. Rose mallow is a tall perennial plant that grows in tidal and freshwater marshes. It produces large white or pink flowers that have red or purple centers in mid-summer.

Leaves are about four inches long, toothed and somewhat lobed.

Flowers are a source of nectar for bees and other insects.

Spring Beauty—*Claytonia virginica* (Montiaceae)

Spring beauties have a special relationship with bees. It is an early flowering plant, blooming before others have bloomed, and relies on miner bees to feed on the nectar and, in the process, pollinate the flower. Miner bees are solitary, non-aggressive ground nesting bees.

Sweet pepperbush—*Clethra alnifolia* (Clethraceae)

Sweet pepperbush is a deciduous shrub that grows in the understory of wet or swampy forests. Leaves are alternate, sharply pointed, and doubly toothed on the margin. Clusters of white, fragrant flowers develop on stalks that are two to six inches long in mid-summer. Fruits are rounded capsules that resemble peppercorns and mature in the fall, often remaining on the plant through the winter.

Sweet pepperbush produces fragrant flowers in late summer when most other plants have passed their peak. It hums with all the insect activity. Nectar and pollen support hummingbirds, butterflies, bees, and other pollinators.

Violet—*Viola sororia* (Violaceae)

Nectar from the bluish-purple flowers attract butterflies and bees. The seeds are a food source for birds and small mammals.

HOST/FOOD PLANTS

Insects are picky eaters and some will only lay their eggs on specific plants. Host plants lure butterflies to the garden to deposit their eggs. Once the caterpillars have emerged, they begin feeding on the leaves of the plant. Beginning gardeners are often alarmed when they see caterpillars all over their plants eating the leaves. You just have to remember that these are butterflies in the making. Plants do recover and grow new leaves.

Black Haw—*Viburnum prunifolium* (Viburnaceae)

I first learned of black haw as wild raisin from a group of wild food foragers. The pulp from the fruits had been used as a chocolate substitute in making cookies and they were delicious. It has both edible and medicinal uses. I learned of it first as an edible fruit and then later learned the bark could be used as medicine. I wanted to include it in my native orchard. I was able to harvest some berries and bring them home to germinate. Only a few came up but that was enough. I was able to successfully transplant them to my native orchard.

Black haw is a native shrub that grows in wooded areas across the eastern and central United States. In the spring it has large white flat-topped clusters of white flowers. The berry-like fruits start out red in the summer and then turn indigo blue in the fall when they ripen. They sometimes remain on the bush through the winter in a dried form, giving them the common name wild raisin. The dark pulp surrounds a flat, inedible seed. In the fall the leaves turn red and purple.

According to the *Peterson Field Guide to Medicinal Plants* (2003), the bark has been used for a number of ailments, including a tonic, sedative, and antispasmodic. It's best to collect the bark in the spring when the sap is rising and it's easier to peel and make a tincture to preserve it.

Black Walnut—*Juglans nigra* (Juglandaceae)

Black walnut trees are native trees that can be found on old homesites where they were planted long ago. They are the preferred host of the luna

and regal moth (Plant Database, Lady Bird Johnson Wildflower Center) plus hundreds of other butterflies and moths (Tallamy, 2007).

Black Willow—*Salix nigra* (Salicaceae)

Black willow attracts a number of insects and butterflies, including commas, viceroys, mourning cloaks, and a number of other butterflies that feed on their leaves (Tallamy, 2007).

Eastern Red Cedar, Juniper—*Juniperus virginiana* (Cupressaceae)

Eastern red cedar is a medium-sized tree found along the edges of fields and forests. It has short, needle-like leaves. The bark of the tree is light reddish-brown and it shreds easily in long strips. Fruits, which are actually cones with small scales, are small and round, turning dark bluish-green with a whitish covering when ripe.

Red cedar produces cones, referred to as berries, that are one of the preferred foods for the cedar waxwings who arrive when the berries are ready in late fall or early winter. Juniper is considered important for wildlife throughout the country. Twigs and foliage are eaten by deer and elk. The branches provide nesting cover for chipping sparrows, robins, song sparrows, and mockingbirds. Juncos, yellow-rumped warblers, and other birds use the branches as roosting cover. The cedar waxwing, named for the fruits it feeds upon, feeds mainly on juniper "berries."

Joe-pye weed—*Eutrochium* spp. (Asteraceae)

Joe-pye-weed is a native perennial wildflower that is a host plant for swallowtails, spotted skippers, painted ladies, eastern tailed blues, and many moths (Young, "The Big Little Garden"), as well as a nectar source for many butterflies.

Milkweed—*Asclepias* spp. (Apocynaceae)

Monarch butterflies need milkweed as a host plant to lay their eggs on. Milkweed (*Asclepias* spp.) is the only source of food for the monarch

butterfly larvae. The leaves contain cardenolides, a cardiac glycoside, which make the larvae and the adult butterflies toxic to predators.

Cardenolides is a cardiac glycoside that belongs to a group of secondary metabolites that may have anticancer, antiviral, anti-inflammatory, neuroprotective, and other therapeutic roles (Joshi, et al, Plant Cardenolides).

Milkweed belongs to a group of plants with simple leaves that exude a white, milky sap when broken. The flowers are unique with five downward petals that vary in color from pink to orange. The fruit is an elongated pod filled with flat seeds attached to a parachute that are carried by the wind for dispersal.

Common milkweed is edible. Young shoots, flower buds, and pods are edible but must be processed by boiling them in two changes of water to remove the cardiac glycosides before eating (Duke, 1992).

Mulberries—*Morus* spp. (Moraceae)

When someone comes up to me and starts describing a medium-sized tree with fruits that look like blackberries, I know immediately what they're talking about. It's a mulberry tree. It seems I've always known about mulberries. I remember singing a song about mulberries as a child on the playground.

Mulberries were a common fruit tree on the farm where I grew up and many of us would show up for school with stained fingers from picking and eating them. We would pick them and then Mom would make cobblers and jam with them.

Today, most people only know of mulberries as a food source for birds to include in their backyard habitat. Mulberries occur in the eastern part of the United States. There is a red mulberry and a white mulberry. The red mulberry is native. The leaves of the native mulberry are toothed and somewhat heart-shaped. The underside of the leaves has fine hairs with a sandpapery feel when rubbed. The white mulberry also has toothed

margins, but the underside of the white mulberry leaves are smooth to the touch.

Even so, both species produce edible berries. The fruit develops from multiple flowers that coalesce into one large berry-like fruit made up of tiny, densely-packed fruits around a central stem. The fruits look like blackberries and will turn reddish-black when ripe on the red mulberry. The fruits on the white mulberry will vary from white to pink to a reddish-black that is similar to the red mulberry.

Mulberries ripen before blackberries. I know they're getting ripe when the red-bellied woodpecker wakes me up early in the morning with a gleeful call. This usually happens mid to late May. It's like they're laughing at me because they beat me to the tree. Or maybe it's to let the other neighborhood birds know the mulberries are ready. Soon the robins, mockingbirds, and brown thrashers show up to partake in the feast. They pick off the ones on the higher branches while I pick those on the lower branches.

Mulberries, as a general rule, don't have to be planted. They come up on their own from seeds dropped by birds in the understory or along the edges of the forest in sandy or loamy soil. They can be transplanted easily into your landscape and require minimal care.

Passionvine—*Passiflora incarnata* (Passifloraceae)

Passionvine feeds the fritillary butterfly. It is a fast-growing vine that climbs over fences, trees, shrubs, or anything that will support it. It has large, deeply lobed leaves with tendrils in the leaf axils. The large, whitish-purple flowers are the most distinctive characteristic and appear during the summer months. A fringe of thread-like filaments grows out from the base of the petals and rests on them. The flowers attract bees, butterflies, and other pollinating insects for their nectar.

Pawpaw—*Asimina triloba* (Annonaceae)

Pawpaws were one of the first trees I learned to identify in the woods as a child on the farm. The long, oval-shaped leaves were very distinct and produced a foul odor when crushed, a likely deterrent for insects and predators. The foul odor can be attributed to compounds in the leaves and twigs called acetogenins. This compound acts as a repellent to most insects, birds, and browsing mammals (Epps, M. L., 2019). Acetogenins are secondary metabolites whose studies have demonstrated antitumor, pesticidal, antiviral, antimalarial, and antimicrobial properties (Bermejo et al., 2005).

The twigs have a terminal bud that feels like velvet and is brown and also foul-smelling. In early spring, before the leaves have developed, small button-shaped buds open to form a maroon-colored flower with three triangular petals. Carrion flies, house flies, and green bottle flies have been observed on the blossoms and flying from one tree to another. Flowers have to be cross-pollinated to produce fruits, which are three to five inches long, somewhat oval-shaped, and slightly curved. They have a green skin that turns yellow as the fruits ripen. The pulp inside is yellowish and soft, like custard. Embedded in the pulp are two rows of large dark seeds.

Pawpaws are in the custard-apple family (Annonaceae), a family that is primarily represented in the tropics. They reach their northernmost range in New York and extend west to East Texas. They form patches in the understory of moist woods and stream banks in much of the eastern United States.

Pawpaws are the only host plants for the handsome zebra swallowtail with striking black and white stripes on its wings. If you have pawpaws growing, you will most likely get zebra swallowtails in your landscape.

Pennywort—*Hydrocotyle umbellata* (Araliaceae)

Pennywort is a wetland plant that creeps along the edges of streams, bays, and rivers and in low, wet areas. It is easily grown in a pond habitat. It is easily recognized by the round leaf that has a leaf stem coming out of the

center. Leafless flower stalks arise from the stem with an umbel of small white flowers. Ducks eat pennywort seeds.

Persimmon—*Diospyros virginiana* (Ebonaceae)

Persimmon is a small to medium-sized tree that grows at the edges of forests, on sand dunes, and hillsides from Connecticut south to Florida and west to Eastern Texas. The oval-shaped leaves are from three to six inches long with smooth margins. Trees are either male or female. Both are needed to get fruits.

The trees have alternate, shiny green, oval-shaped leaves. Male and female flowers are on different trees and bloom in late spring. Female flowers are greenish-yellow and larger than the male flowers, which are white and bell-shaped. Fruits begin to develop on the female trees shortly after the petals drop and grow into a round, orange to purplish berry.

Growing your own persimmon trees can save lots of driving time looking for them and hoping the animals didn't beat you to them. Persimmons germinate easily from seed and can be started by planting them in the fall in the area where you want the trees to grow. They grow in dry, well-drained soil in full sun to part shade. Mark where you have planted them and wait until after the last frost to watch for them to emerge. They won't germinate until the soil has warmed up, usually in June. It takes about five to seven years to bloom and produce fruit. If you have space, plant several to assure getting a male and female.

Prickly Ash, Southern—*Zanthoxylum clava-herculis* (Rutaceae)

It's not an ash, but it does prickle. Prickly ash is an aromatic, small tree with spreading branches and stout spines on the trunk. As it ages, the spines become like corky pyramids. Also known as the toothache tree, the toothed projections on the trunk fit with the "Doctrine of Signatures," which states that some characteristic of the plant points the way to its use. In this case

the toothed projections on the trunk resemble teeth and are used to treat gums.

All parts of the prickly ash have a numbing effect when chewed and stimulate the salivary glands. My first taste test of prickly ash came while I was leading a group. I learned early you don't demonstrate chewing a prickly ash leaf and then try to talk. Your mouth gets numb and you start salivating and drooling. It is a good plant to use before going to the dentist.

The numbing effect can be attributed to herculin, a secondary metabolite that produces a localized numbing effect on the tongue and in the mouth (PeaceHealth, 2025). Prickly ash has traditionally been used to treat toothache, as well as rheumatic conditions, Raynaud's disease, and to stimulate the circulatory system (Foster and Duke, 2000).

Prickly ash also contains spilanthol, which kills and repels insects but is a local anesthetic for humans (Austin, 2021), as well as coumarins, resins, and tannins that have antibacterial and anti-inflammatory activity (Foster and Duke, 2000).

Prickly ash is insect resistant. The toxic chemicals in the leaves are a deterrent to herbivores but a food for the giant swallowtail caterpillars who are able to ingest the toxins without any harmful effects. These same toxins prevent them from being eaten by predators (The Natural Web, 2017).

Prickly ash leaves are compound with five to thirteen leaflets, often with paired spines at the base. When crushed they emit a citrus smell. Small, yellow-green flowers develop in branched clusters at the ends of twigs in the spring. Prickly ash is dioecious, with male and female flowers on separate trees. The flowers are tiny but fragrant, attracting bees and flies. Biting into the flower buds is similar to biting into the peel of an orange. The fruit looks like a pod but is actually a follicle containing, usually, a single black seed that splits open when mature.

Southern prickly ash is native to the southeast and can be found growing in dry, sandy soils of dunes, and the maritime forest along the

coast. There is also a northern prickly ash that grows north from Quebec and Ontario south to Oklahoma and Louisiana that is similar to the southern prickly ash.

Growing prickly ash from seed is a challenge. It's best to start with a seedling. Seeds require scarification first or should be planted in the fall. Once established, prickly ash requires little care, is drought tolerant, and is resistant to insects and pests.

I chose to start seeds in pots and put them outside over the winter. Starting with about 20 seeds, one germinated and has grown into a tree. The second year, after not much success with starting seeds in pots, I threw the whole bag of seeds into the compost pile. A couple of years later when potting up plants from the compost pile, I found several baby prickly ash plants coming up from seeds. The compost pile apparently had the right temperature and soil needed for germination.

Prickly ash is one of the only host plants and a nectar source for the giant swallowtail butterfly.

Serviceberries—*Amelanchier* spp. (Rosaceae)

Serviceberries are edible for humans as well as the birds and the bees, who have a mutual relationship with serviceberries. The flowers lure the bees in to pollinate the flowers which develop into fruits. The fruits are sweet and attract the birds who eat the berries and then pass the seeds through their gut where they get scarified and deposited to the ground. Scarifying the seeds through a bird's gut stimulates germination. If you find a cluster of seedlings coming up together, they were probably from seeds dropped by birds.

Serviceberries are a host plant for a number of caterpillars, including the viceroy, the striped hairstreak, and the red-spotted purple (Ludden, 2022).

Sassafras—*Sassafras albidum* (Lauraceae)

Sassafras is a native tree that is known for the taste that is reminiscent of root beer. It is the root that was originally used to flavor root beer. The flavoring comes from safrole, a compound that was banned by the FDA due to its possible carcinogenic effects. However, research has shown that safrole, when heated, is destroyed. Making sassafras root beer involves boiling the roots, resulting in the evaporation of the safrole. Chewing on the roots, even though they are tasty, is not recommended.

Sassafras is better known and used today in landscaping for its use as a host plant for the spicebush swallowtail. Sassafras and spicebush are the main host plants for the spicebush swallowtail.

Easily recognized in summer by its mitten-shaped leaves, sassafras is probably one of the best known native plants in the eastern United States. Leaves have three common shapes, often on the same tree or even on the same branch. Shapes may be oval, mitten-shaped for right or left hand with two lobes, or have three finger-like lobes. More often seen as a shrub, sassafras can also become tree size given the right conditions. Roots grow horizontally underground, sending up shoots that form thickets. The bark of mature trees is deeply furrowed.

Sassafras can also be recognized in winter by the greenish bark and lighter colored buds. Scratching the bark with your thumbnail and sniffing it will reveal a spicy aroma, completely unlike the root beer-like smell of the root. The sure test comes from digging up the root and smelling for the root beer scent.

In late winter or early spring, following several warm, sunny days, the buds start to swell and within a couple of weeks, yellowish-green clusters of flowers appear at the end of the stems, before the leaves have developed. Male and female flowers are usually on separate trees. The fruit is a bluish-black aromatic drupe that dangles from reddish stems.

Turtlehead—*Chelone glabra* (Plantaginaceae)

Turtlehead is a native perennial with white flowers that develop in late summer or fall, providing nectar when other plants have finished blooming. It is a wetland plant that grows two to three feet tall in freshwater swamps, along streams, and in other wet areas. The leaves are opposite, lance-shaped, and sharply toothed. The flowers slightly resemble the head of a turtle—hence the name. It is a host plant for the Baltimore checkerspot butterfly.

Virginia Snake Root—*Endodeca serpentaria* (Aristolochiaceae)

Also referred to as Virginia Dutchman's pipe, Virginia snakeroot is a small herbaceous perennial that grows on the forest floor in mature dry to moist forests. It is related to Dutchman's pipe (*Isotrema macrophyllum*) that grows in the mountains but is not a climber. The flowers are similar in shape but are much smaller and shaped like a curved pipe stem. Virginia

snake root has an underground rhizome that can be divided for propagation or it can be started from seeds.

Virginia snake root and Dutchman's pipe are the only native plants in Virginia that are host to the pipevine swallowtail. The first time I saw a pipevine swallowtail, it took my breath away. When it opens its wings, you catch glimpses of metallic blue light on its hind wings before it closes them up again. It reminded me of the blue morpho from the rainforest. As I watched, it sought out the Virginia snake root growing in my shade garden and proceeded to lay its eggs.

Aristolochic acid is the compound found in Dutchman's pipe that makes it toxic or distasteful to predators. Aristolochic acid has been used to treat a variety of ailments, but its use is controversial due to its possible carcinogenic effects.

Waxmyrtle—*Morella cerifera* (Myricaceae)

Waxmyrtle is a fragrant evergreen shrub with leaves that have toothed edges beyond the middle and emit a scent when crushed. Yellow-green flowers develop in a narrow, cylindrical cluster at the base of the leaf in early spring followed by a cluster of one-seeded bluish-white fruits that ripen in the fall, about the time the yellow-rumped warbler arrives. The berries from the waxmyrtle are one of its favorite foods.

Wild Black Cherry—*Prunus serotina* (Rosaceae)

Cherries are in the rose family and are distributed over most of the eastern half of the United States. It can be recognized in the spring with its clustered racemes of tiny white flowers hanging from the branches. The leaves are elliptical, finely toothed, dark green above and lighter beneath. The twigs are reddish-brown, which when scratched emit a strong, pungent odor. Black cherry trees are the largest and most useful of the wild cherry trees in those areas where it grows.

If there is a wild cherry tree growing anywhere near you, planting a cherry tree is probably not necessary. More than likely it's already there, planted by the birds. Wild black cherry is a native and a favorite of birds. Woodpeckers, robins, brown thrashers, blackbirds, and numerous others rise with the sun and go to work picking the branches clean. I listen to their cheery calls as I do my morning chores, pleading with them to leave me some.

> As I stepped into the morning sunshine on that April morning, a familiar scent greeted me. I scanned the edge of the yard for confirmation. It was a wild black cherry, one of several that I had let grow from seeds that had been dropped by birds. At first all I saw were the clusters of tiny flower buds. But I kept looking, confident that the scent I had detected came from this tree. Finally, on the back side, which was also the side facing the sun, I found it, a cluster of small white flowers at the end of a stem that had just opened. The first cherry blossoms of the season. I took a deep breath, inhaling its essence as I did so. It would be at least three months before the fruits would ripen, but for now I could enjoy the delightful presence of the flowers.

Wild Plum—*Prunus* spp. (Rosaceae)

Wild plums are native, and different species are scattered throughout the United States. Some are the size of cherries while others are larger, like a golf ball. They range in color from a deep vivid red, a glowing orange, to a dark yellow. Find out which species are native to your area before planting.

Wild plums make an attractive addition to your landscape. White, fragrant flowers cover the tree in the early spring, followed by the fruits

which ripen in late spring. Plums form colonies and can be controlled with repeated mowing.

Wild plums are the host plant for the red-spotted purple butterfly and various moths (Missouri Prairie Foundation).

Yaupon Holly—*Ilex vomitoria* (Aquifoliaceae)

Yaupon is a large evergreen shrub or small tree, often forming thickets along the Atlantic coast from Virginia south to Central Florida and along the Gulf coast to Southern Texas. It can grow in dry sandy soil near the ocean and can withstand strong winds and salty air. Yaupon blooms in the spring with numerous tiny white fragrant flowers. These are followed by shiny red berries that mature in autumn and often remain attached throughout the winter, making it popular for Christmas decorations.

Yaupon is believed to be the only plant in North America with caffeine in the leaves. The leaves have to be roasted before the caffeine is soluble in water. To maximize its effect, drink while the water is quite hot. A common practice among the southeastern Indians was to parch the leaves in an earthenware pot over a fire (Hudson, 1979). With today's modern

conveniences, we are able to roast the leaves in an oven for 15 to 20 minutes, grind them, and then steep them in hot water to make tea. The length of time roasting determines whether it is light or dark roast.

The berries are a great source of food in the winter for the fruit-eating birds, especially the cedar waxwings who arrive in large numbers to feast on the fruits.

SEED PLANTS

A seed plant is any plant that produces seeds. Some plants are grown primarily for their seeds and wait for the plant to finish blooming for the seeds to develop.

Thistle—*Cirsium* spp. (Asteraceae)

Thistles are a valuable source of food for bees, butterflies, and songbirds. Bees and butterflies seek out the nectar from the flowers while the songbirds feed on the seeds.

Evening Primrose—*Oenothera biennis* (Onagraceae)

The fruit of the evening primrose is a capsule and is filled with little black seeds that are food for goldfinches and other seed-eating birds.

POND PLANTS

Before installing plants, get familiar with native plants that grow in wetlands and how they grow. These are indicator plants of wetlands. Even though the area may not be under water year-round, if it has waterlogged areas for long periods during the growing season, it is technically a wetland. Plants that grow in these areas are different from those that grow in the surrounding non-wetlands.

Some wetland plants have deep roots and require deeper water. Others have tubers and/or rhizomes and grow in shallow water. Others can tolerate periods of dryness. Some plants do better to keep in pots and set the pot in a container with standing water.

Arrowhead—*Sagittaria* spp. (Alismataceae)

Also referred to as duck potatoes or wapato, arrowheads are widely distributed, especially in the East. Not all of them have arrowhead-shaped leaves; some species have linear or lance-shaped leaves. Arrowheads grow in shallow freshwater marshes in the mucky soil. About mid-summer, a leafless flower stalk, with no apparent leaves, arises from the roots. It is topped with flowers that have three white petals that grow in whorls. Female flowers are followed by a greenish ball, also in whorls of three. Roots extend out from the base of the plant, sometimes up to two feet, with edible tubers that develop on the ends.

Gathering the tubers can be difficult. They mature in late fall or early winter after the leaves have started to die back, and also about the time that temperatures start to drop below freezing. Not only do the roots go deep and out, but the tubers are embedded tightly in the muck. Breaking them free requires breaking up the muck and releasing the tubers. This can best be done by using a digging fork and stomping around in the muck. Wearing waders is highly recommended as they can serve as protection not only from the cold water, but also from reptiles that might be awakened from their winter sleep.

As the tubers break free of the muck, they float to the surface and are easily gathered. Tubers can be prepared in much the same way as potatoes. Sliced and steamed for about twenty minutes, they have a taste similar to seasoned potatoes.

Duck potatoes, as the name indicates, are a valuable food for waterfowl that winter over in the areas where they grow, including black ducks, canvasbacks, pintails, tundra swans, snapping turtles, and muskrats. Tubers growing in shallow water or soft mud are more easily obtained. Ducks will also eat the small, flattish seeds contained in the green ball following the fruits.

Arrowhead makes an attractive feature in a backyard pool. It grows best in full sun, mucky soil, and shallow water.

Arrow Arum—*Peltandra virginica* (Araceae)

Arrow arum is a native wetland perennial with large heart-shaped leaves, and it is often confused with arrowhead. Instead of tubers for roots, arrow arum has a large, submerged rhizome. It blooms in the spring with a spadix that is greenish to yellow surrounded by a greenish-white spathe. The fruit is a brown berry with seeds enclosed in a clear gelatinous pulp that enables them to float in water to be distributed to other areas.

The fruits are one of the preferred foods of wood ducks, muskrats, and rails. The foliage provides cover for waterfowl and other wetland birds.

Atamasco Lily—*Zephyranthes atamasco* (Amaryllidaceae)

Atamasco lily has also been referred to as Easter lily because it blooms near Easter time. It is a native wetland plant that prefers moist, acidic soils in part sun or some shade. Thick, shiny, grass-like leaves form clumps in wet mud. A single leafless flower stalk produces a large, showy white flower with six petals that unite to form a funnel.

Caution: Bulbs and leaves contain toxic alkaloids and should never be ingested.

Blue Flag Iris—*Iris virginica* (Iridaceae)

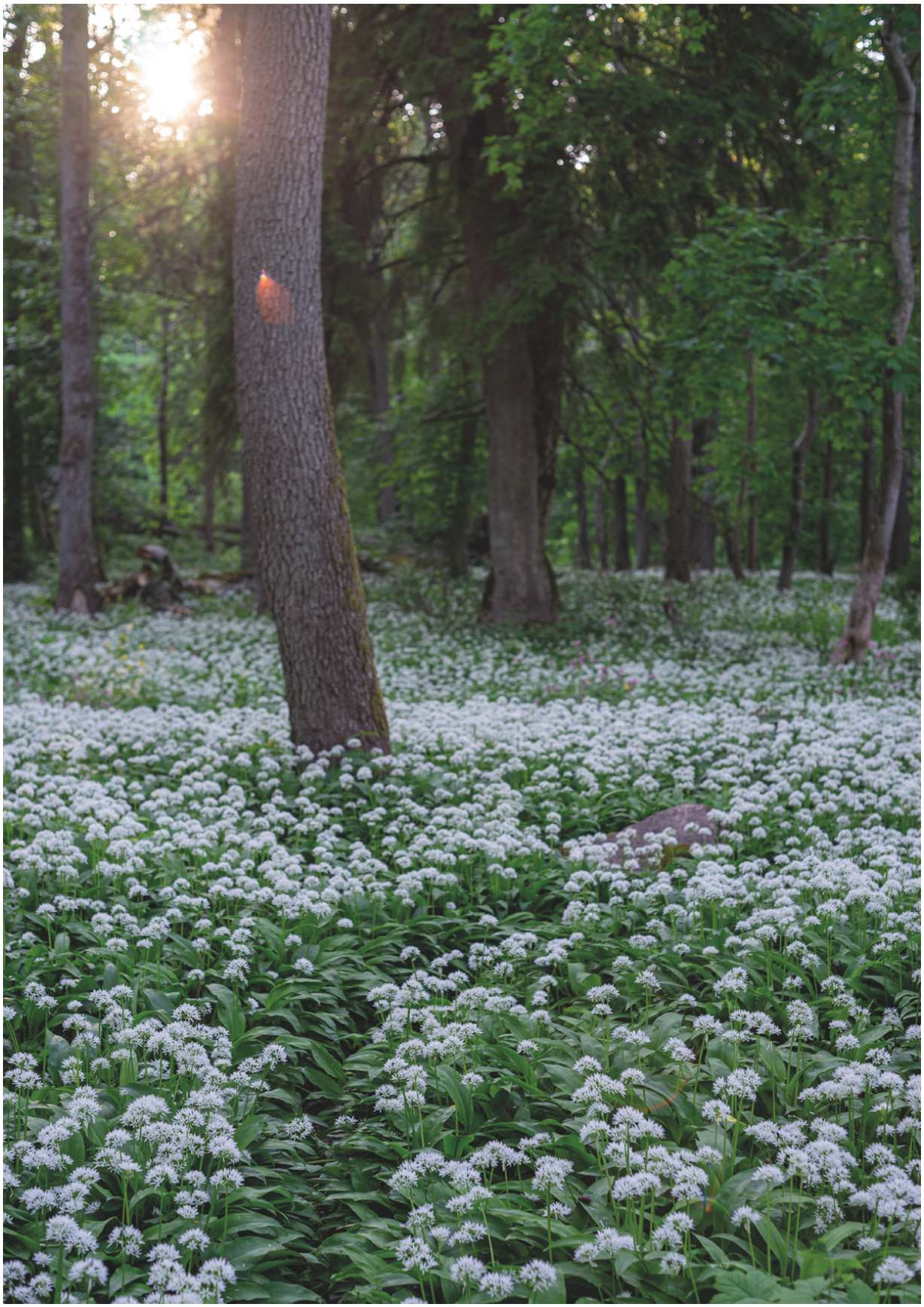
A native wetland perennial that is ideal for backyard ponds or edges of wetlands. Long, narrow basal leaves grow from underground rhizomes and quickly form a colony. Showy flowers with three bluish-purple petals develop on the ends of long stalks.

Blue flag iris grows best in wet, mucky soil that stays moist year-round in full sun or part shade. Root division is the easiest way to encourage new plants.

Pickerelweed—*Pontederia cordata* (Pontederiaceae)

An emergent wetland with large heart-shaped leaves arising from the water in freshwater marshes and along the edges of streams and canals. Flower stalks are topped with a spike of bluish-purple flowers that give way to starchy seeds.

The flowers are an excellent source of nectar for a variety of butterflies and other pollinating insects. Seeds are a source of food for various ducks, including mallards, black duck, green-winged teal, and wood duck.



CHAPTER FIVE
THE FOREST LANDSCAPE

A forest garden can be created in any unused area in your landscape. It can be achieved on any property, any size, as long as you have all the elements that make up the forest. A forest has layers. It's not just one-story. Establishing a forest landscape involves planting more than just trees.

An open area very quickly fills in with plants just waiting for the light and an opportunity to grow. Lawns, meadows, and fields are easily transformed into a forest simply by letting nature do its thing. Very often, nature doing its things means there is a mix of native, non-native, invasive, and aggressive species. If producing food from the forest garden is the goal, then select those plants to stay that produce food or other beneficial products and remove the rest.

Gardening generally brings to mind neat rows of vegetables with either full or partial exposure to the sun. But there is another approach one can take, and that is forest gardening. The forest garden is not about turning a forest into a garden. The plants are already established in a forest and growing just fine. The forest garden is about turning a garden or yard into a forest.

When you walk through a forest, you are experiencing a forest garden in its wildest form. A forest garden is a mimicry of a forest with all its layers, including a canopy of tall trees, an understory of smaller trees with shrubs underneath, and climbing vines that spiral up through the layers to the treetops, tying it all together. On the forest floor are herbaceous plants, ferns, mushrooms, and a multitude of organisms living in and under the soil. Instead of rows of one plant, there are patches of plants with layers. As a result, there is usually a diversity of plants that offer flowers, food,

medicine, and other products for human use. A forest garden can be built around existing trees or shrubs, or in established woodlands.

Non-Timber Forest Products

Non-timber forest products include those products that can be harvested without cutting the trees down. Some of these products include wild mushrooms, berries, fern, tree boughs, cones, moss, lichens, maple syrup, honey, and medicinal products.

Once established, a forest landscape requires little maintenance. No tilling is involved since most of the plants will be perennials. By not tilling, the natural soil structure is preserved, allowing the microbes and critters in the soil to do their job of cycling nutrients and maintaining fertility. A food forest is designed to gather and store rain, carbon, and nitrogen (Frey, D. and Czolba, M. 2017). The deep roots of trees and shrubs make them more drought tolerant than the annuals grown in most gardens. They shade the smaller plants below, maintaining moisture and protection from the sun. Properly managed, a food forest can build up the soil, while at the same time producing a yield.

Including trees in the landscape is not new. As ancient civilizations developed, they settled around forested landscapes. It wasn't long before they realized that those plants that grew along the edges were more productive than those in the interior of the forest. People learned to create and manage open areas through various techniques for the purpose of growing food and medicine, establishing what is now referred to as food forests, or forest gardens.

A forest landscape offers more than just food and medicine. It provides habitat for a myriad of wildlife. Native pollinators find the host plants they

need to lay their eggs and nectar sources for the adults. Songbirds fill the air in the spring and predators move in to maintain balance.

I wanted a forest in my landscape so I could walk out the front door and feel like I'm in the woods. I started with my front yard. A forest was already in the making. A cedar tree and a pecan tree were on opposite corners. I added to the canopy by planting loblolly pine along the edge of the driveway and another cedar close to the road. The elevation dropped a few feet in the front section, and I planted two bald cypress trees. Both species grew fast and soon became a part of the canopy.

The Canopy—*Tall Trees*

Tall trees make up the canopy. This is where the crowns meet and form a thick layer that filters sunlight coming through the trees. These trees may be either deciduous or evergreen.

Deciduous trees provide shade during the summer and are open during the winter months. These trees are characteristic of an older forest that has gone through the successional changes and formed a mature forest. Deciduous trees include hickories, oaks, and beech. These are the nut trees.

Evergreen trees provide shade year-round. These are the pines and cedars. They need lots of sunlight and grow fast. Vines also move in. If it is a young forest, it will probably have a lot of vines that got started when there was still plenty of light coming into the forest. Once established, they continue to grow, reaching always for the light, eventually forming a thicket of vines in the canopy.

Pioneer Pines—*Pinus* spp. (Pinaceae)

Pines are often referred to as the pioneers of the forest. They are characteristic of a young forest with vines taking advantage of the sunlight and growing with them. The understory is usually dense and difficult to walk through. They are one of the first of the woody plants to move into an area that has been cleared and can grow in full sunlight.

Pines are part of a large family that also includes larches, hemlocks, firs, spruces, and Douglas firs. The genus of pines (*Pinus*) grows throughout most of the US, usually in acidic soils, often sprouting after a fire.

Cedar, Eastern Red—*Juniperus virginiana* (Cupressaceae)

Cedar is a native evergreen tree with needlelike to scalelike leaves. It belongs to the cypress family that includes about sixty species, thirteen that are native to North America (Harlow and Harrar, 1969). The bark is thin and soft, shredding easily. The eastern red cedar is dioecious with male and female parts on separate trees. What appears to be berries, when looked at under a magnifying glass, are actually tiny cones with scales pressed so tightly that they appear to be round. The fruits are aromatic and turn blue when mature.

Mature Hardwood Forest

Coming up in the understory of the pines are the hardwoods. They grow much more slowly than the pines and will eventually replace them. When a forest reaches the stage where it is able to reproduce itself, it is a mature forest. Oaks, hickories, and beeches occupy the canopy of old, mature forests.

Oaks—*Quercus* spp. (Fagaceae)

"If there could only be one tree, what would it be?" I was asked. Without hesitation I responded, "It would have to be the oak." With branches that spread out to nurture you and a buttress to nestle within, it provides strength and comfort. Its fruits are life sustaining and its bark is healing.

Oaks are one of the first trees that I got to know growing up. They grow as a part of the mature hardwood forest. In the fall the nuts covered the forest floor. I gathered them because they were beautiful, with shades of yellow, green, brown, and orange. I tried eating one once, but discovered it was extremely bitter, sour, and dried my mouth out. It was only years later that I learned about their edibility and how to prepare them for food. Acorns are edible but are rich in bitter tannins, an astringent property that is removed by soaking them in water, pouring it off, and repeating the process until the water is clear.

There are many types of oaks, with more than 300 species, not counting the hybrids. Oaks are in the beech family and are mostly deciduous trees that occur in the temperate, subtropical, and rarely tropical regions in the northern hemisphere (Weakley, Ludwig, Townsend, 2012). Oaks bloom in the spring, with the staminate flowers forming slender catkins from buds on the previous year's growth. The pistillate flowers are small and inconspicuous and develop in the leaf axils on the current season's growth. Pollen is carried by the wind, and once pollinated, the tiny flowers develop into acorns (Grimm, 1962).

All oaks have acorns, which is a nut. The cap is the outer hull. Acorns contain protein, fats, and calories, which will keep you alive.

Oaks are basically divided into two groups, although the dividing line is not always clear. There are the red oaks, with veins extending beyond the margins of the leaves, forming bristle tips. It takes two years for the acorns to mature with a velvety lining on the inside of the shell. The nut is extremely bitter when eaten raw. Then there are the white oaks, with smooth edges on the margins of the leaves and nuts that mature in one year. These nuts are much less bitter than those of the red oak group. The live oak is generally classified as a white oak and its acorns are low enough in tannin that they can be eaten raw when fully mature.

Oaks are one of the most beneficial trees for wildlife, supporting both vertebrate and invertebrate species. Acorns supply a bulk of the nuts for deer, raccoons, turkey, mice, black bear, and squirrels. Hollowed out cavities are homes for nesting birds while numerous species of insects use oaks as host plants (Tallamy, 2007).

Beech—*Fagus grandifolia* (Fagaceae)

In the Eastern United States in a mature hardwood forest, there is one tree that stands out above all others. The American beech has smooth, grayish-white bark with prop roots at the base that look like feet,.

Beeches are one of the first hardwood trees to bloom in the early spring, sometimes late winter. If there is a heavy frost after the beech tree has bloomed, it may not produce nuts next fall. The shell may develop, but inside there is nothing.

Locate the trees in the winter when they are bare and then watch as the buds start swelling and then pop open. The male flowers appear as yellowish-green balls. Female flowers are much smaller and are at the end of a short stalk. This is what will develop into beech nuts in the fall.

Hickory—*Carya* spp. (Juglandaceae)

You can find hickory nut trees in the fall by watching for the squirrels. They will lead you to the nuts. The squirrels are also responsible for planting nut trees in your yard and garden.

Hickories are part of a mature hardwood forest, often in association with oaks, forming an oak-hickory forest community. In the fall, the compound leaves, made up of five to nine leaflets depending on the species,

turn golden yellow, lighting up the forest floor with a warm glow as they fall to the ground.

Hickories can be found through the eastern and southern parts of the country.

The familiar pecan tree grown in the Southeast is related to hickory trees and is commercialized for its nuts. The shell is much thinner and easier to crack.

The Understory

Nestled underneath the tall trees are the understory trees, those trees that never quite reach the canopy layer. These trees are often overlooked as insignificant compared to the big ones. Dogwoods and redbud grow in the understory, as well as native fruit trees, including serviceberry, mulberry, hawthorn, and crabapple. These trees can grow in shade but will produce more fruit if they get some sunlight.

The understory trees play a valuable role in the forest. Small birds find cover, food, and nesting sites that they need for survival. Their flowers offer nectar for the pollinators and the fruits provide food for the birds and people.

Hercules Club—*Aralia spinosa* (Araliaceae)

Also called devil's walking stick, Hercules club is a small, understory tree whose main stem and leafstalks are armed with sharp spines. Compound leaves are large and twice divided, with many oval, toothed leaflets. A large panicle of tiny white flowers develops in mid-summer at the top of the stem followed by small, berry-like fruits that ripen in the fall. Birds and small mammals, including raccoons and opossums, eat the fruits.

Devil's walking stick comes up from seeds dropped by birds. It prefers a rich, loamy soil but will tolerate a wide range of conditions. It is drought tolerant and can be transplanted successfully to your landscape by dividing suckers or root cuttings. It forms colonies, so give it space if you plant it. It

also self-seeds and will form thickets. Prompt removal is recommended if you don't want it to take over. (North Carolina Extension Gardener Plant Toolbox, *Aralia spinosa*).

Pawpaws—*Asimina triloba* (Annonaceae)

Pawpaw is a small tree or large shrub that forms the understory in the forest. Growing pawpaws is easy. Getting the plants to produce fruits is not. Pawpaws have to be cross-pollinated from two different colonies to produce fruits. I had the opportunity to bring some fresh fruits home with me one year and planted the seeds. The next spring the seedlings emerged. After about five years they finally bloomed, but no fruits developed. I assumed these would be like the others on the farm with no fruits. After all, they are pollinated by flies, and crop dusters fly over about the time they are blooming. I had pretty much given up.

Several years went by and then one day, while out working in the field, I saw young pawpaw seedlings. Thinking they were a sprout off the parent tree, I dug one up and discovered it was a seedling just germinated. I looked around and there were more all over the ground. I looked up and saw the tree overhead was loaded with pawpaws.

Pawpaws are also one of the favorite fruits of bears and there is a healthy population of bears on the farm. What I thought was going to be a good year for pawpaws turned out to be a good year for the bears. They do attract wildlife.

Redbay, Swamp Bay—*Tamala palustris* (Lauraceae)

Redbay is a broad-leaved evergreen understory tree that grows at the edges of swamps and moist woodlands. Large, elliptical-shaped leaves are thick and leathery and emit a fragrant scent when crushed. It has red, fuzzy buds on the twigs and stems. Small, yellowish-white flowers grow in small clusters in the leaf axils followed by a small, dark blue drupe that matures in the fall.

Redbay is a host plant for a variety of native insects, including the palamedes swallowtail, while mammals and birds feed on the fruit and foliage.

Redbud—*Cercis canadensis* (Fabaceae)

When the redbud tree blooms, you know that spring has arrived. The flowers appear in conjunction with the mating calls of songbirds and the

chorus of frogs in the ponds and swamps. The drab colors of winter are replaced with bright shades of green, pink, and lavender, among others.

Redbud grows in the eastern part of the United States, from New Jersey south to Central Florida and west to Texas and Nebraska. To locate a redbud tree, look for pinkish-purple, or fuchsia-colored patches in the understory of the forest or its edges. It is one of the most attractive flowering trees in the forest. Because of its beauty it is often planted in yards, parks, or other landscaped areas.

Redbuds are in the pea family, and as such have irregular-shaped pea-like flowers. The flowers grow in umbels along the branches and sometimes trunk of the tree before the leaves have come out. Pollinators such as bees, butterflies, and other insects are attracted to the flowers for their nectar.

Serviceberry—*Amelanchier* spp. (Rosaceae)

The first time I saw serviceberry was when I was walking through a maritime forest with live oaks and loblolly pines. The bluish-purple berries on an understory shrub got my attention. They looked like blueberries, but they were on a tree and blueberries grow on a shrub. It was late May, a little too early for the blueberries to be ripening.

I had found serviceberries and what a treasure it was. I found a clump of serviceberry seedlings coming up under the tree where they had germinated from last year's fruits, probably dropped by a bird through its digestive system, and dug them up and brought them home to install in my landscape.

Serviceberry is a small deciduous tree or shrub that grows in the understory of hardwood forests. It does best with partial shade and some sunlight. Serviceberry blooms in the early spring before the leaves have emerged and is covered with small white flowers with five petals. Following the flowers are the berry-like fruits that turn purple when ripe. Birds love the berries and often eat them before they have fully ripened.

Serviceberry is a popular tree in the landscape. Being an understory tree, it prefers part shade and moist, well-drained soil, but can adapt to both

wet and dry conditions. It also grows well along streams, ponds, and other wetland sites.

The Shrub Layer

The shrub layer consists of woody plants that are smaller than those in the understory and are mostly shade tolerant. Shrubs have multiple stems rather than a single stem that trees have. The shrub layer is protected from heavy winds and supports a multitude of flowering shrubs, including wild blueberries and huckleberries, hazelnut, viburnums, and azaleas. These in turn attract pollinators: bees, wasps, butterflies, and more.

Beautyberry—*Callicarpa americana* (Lamiaceae)

Beautyberry is a coastal shrub that grows in moist, sandy forests. Leaves are in pairs and toothed. Pink clusters of flowers form in the leaf axils about mid-summer, followed by clusters of berries that turn bright purple in the fall, making it a favorite in landscaping. The berries are edible and ripen in the fall, lingering into the winter, providing food for the winter bird population. Beautyberry leaves have been found to be an effective insect repellent.

Blueberries—*Vaccinium* spp. (Ericaceae)

Blueberries are members of a large family of plants known as the heath family. They can be grouped into two kinds, the highbush and the lowbush. Both are shrubs and are common in the Eastern United States. The highbush blueberry is the tallest of the blueberries and can get up to fifteen feet tall. The low-bush blueberries are much smaller, usually no more than three feet high. Flowers often have a pink tint followed by fruits similar to the highbush and are equally sweet. The foliage of both the highbush and the lowbush blueberries turns brilliant red in the fall.

There are two species of highbush blueberries, the black highbush (*Vaccinium fuscatum*) and the southern highbush (*Vaccinium formosum*). The southern blueberry is the ancestor of our cultivated highbush blueberry. Leaves are oval-shaped with green, sometimes red stems that are somewhat zig-zagged, making them easy to identify in winter. It begins flowering as

early as April with small, white, bell-shaped flowers. Fruits begin ripening by the end of May.

The fruits of wild blueberries are much smaller than cultivated blueberries but make up for the size in flavor. They are much sweeter than the cultivated blueberries. They also vary in color with shades of blue to almost black.

Hazelnut—*Corylus americana* (Betulaceae)

Hazelnuts are medium-sized native shrubs, reaching a height of up to ten feet. They are in the beech family, Fagaceae, and grow in thickets along ditch banks and the edges of woodlands as an understory shrub across the northern United States and southern Canada. Leaves are somewhat heart-shaped, alternate, and have double teeth along the margins. Male and female flowers develop on the same plant. The male has yellowish-brown catkins that hang from the branches in late winter. Female flowers are tiny and have small reddish pistils projecting in all directions from the ends of the branches that are easily missed. Flowers develop above the male catkins and rely on the wind for cross pollination.

The beaked hazelnut, *C. cornuta,* occurs on the West Coast as well as the East whereas the American hazelnut, *C. americana,* is limited to Eastern North America. It is easy to distinguish between the two by the husks. The beaked hazelnut is named for the bristly husk which resembles a tubelike beak at its tip. The husk of the American hazelnut looks more leaflike and is ragged on the end. The twigs and leafstalks on the American hazelnut are covered with rough hairs; the beaked hazelnut has smooth twigs. The nuts of both shrubs are delicious raw or cooked.

My first hazelnut sighting came while paddling with friends on a waterway near Virginia Beach in late summer. At one of our stops when we got out to explore the surrounding area, we found a patch of hazelnuts. I was impressed with the leaflike husk that partially enclosed the nut. I took a nut home with me, put it in a pot, and set it outside for the winter. When

spring approached, I started watching the pot to see if anything would come up. Several times I dug down into the soil to see if the nut was still there and if it was sprouting yet. Finally, I saw the sprout, then the shoot, and now, years later, a colony of hazelnuts.

Sweet Pepperbush—*Clethra alnifolia* (Clethraceae)

Sweet pepperbush is a deciduous shrub that grows in the understory of wet or swampy forests. Leaves are alternate, sharply pointed, and doubly toothed on the margin. Clusters of white, fragrant flowers develop on stalks that are two to six inches long in mid-summer. Fruits are rounded capsules that resemble peppercorns and mature in the fall, often remaining on the plant through the winter.

Waxmyrtle—*Morella cerifera* (Myricaceae)

A fragrant evergreen shrub with leaves that have toothed edges beyond the middle and emit a scent when crushed. Yellow-green flowers develop in a narrow, cylindrical cluster at the base of the leaf in early spring followed by a cluster of one-seeded bluish-white fruits. The berries are a source of food for the yellow-rumped warbler who arrives in the fall when the berries ripen.

CLIMBERS AND VINES

Climbers and vines grow where they are able to get ample sunlight and have a support tree or shrub to climb up. While many are invasive and should be removed, there are some vines that are beneficial and provide food.

Vines get their start where they can get plenty of sunlight and are common in a young forest. Even after the trees have matured, the vines are still there. Once they have been cut at the base, they don’t get the sunlight they need to grow and will eventually die out. Japanese honeysuckle,

yellow jessamine, greenbrier, and wild grapes are common vines that grow in young forests.

Coral Honeysuckle—*Lonicera sempervirens* (Caprifoliaceae)

Coral honeysuckle makes a colorful addition to the forest landscape. It grows in well-drained soil, neutral to acidic soil in full sun. It can be propagated by dividing the roots. Coral honeysuckle needs support as it climbs; either a trellis or fence work well. It flowers in early to mid-spring, often coinciding with the arrival of the hummingbirds who rely on coral honeysuckle for its nectar.

Grapes, Muscadine—*Vitis rotundifolia* (Vitaceae)

Muscadine grape is a native vine and the ancestor of our cultivated grapes. It was always a challenge to find that patch of wild grapes that I could comfortably pick. They germinate easily from seeds and after scattering the fruits in my native orchard I now have wild grapes coming up and climbing the trees for support.

Muscadine grape is indeed the most popular wild grape in areas where it grows. The scuppernong grape that is cultivated in backyards or grown commercially is a variety of the muscadine and has light-colored skin that is thinner than the muscadine. The scuppernong also grows wild and is sometimes referred to as the blonde muscadine.

Muscadine grapes are easily recognized by their woody vines which climb high into trees, often at the edges of woods. Forked tendrils and heart-shaped leaves characterize the wild grapes. All are edible, but some are sweeter than others. Most grapes are sweet to eat straight from the vine and make excellent jelly, pies, and wine.

In addition to the muscadine grape, there are at least two dozen other species of wild grapes that occur in the United States. They are easily recognized by their woody vines, which climb high into trees, often at the

edges of woods. Forked tendrils and heart-shaped leaves characterize the wild grapes.

When growing grapes, make sure it is a grape that is native to your area. Muscadines only grow in the southeast. There are various species of wild grapes that grow in a variety of habitats.

> Grapes grew wild on the farm where I grew up. I never knew which species it was. I was most familiar with the vine. Grapevines hung from the tops of the trees at the edge of the holler. They were perfect for swinging across to the other side. Having seen Tarzan and Jane swinging on grapevines, we gave it a try. What fun it was. I later realized there were actually fruits on the vines. Unlike the muscadine on the East Coast, the fruits were small and best when harvested after a frost.

Wild Yam—*Dioscorea villosa* (Dioscoreaceae)

Wild yam is a perennial vine that grows in damp woods with heart-shaped leaves. The bottom leaves grow in whorls of three to eight. Small greenish-yellow flowers are inconspicuous and hang in drooping racemes.

Yellow Jessamine—*Gelsemium sempervirens* (Gelsemiaceae)

Yellow jessamine is an evergreen, woody vine that climbs over trees, shrubs, and other structures. It is an early bloomer, producing yellow, tubular-shaped flowers in late March or April. The flowers are a nectar source for hummingbirds and pollinators.

Forest Floor

Flowering plants and ferns are the dominant plants in this layer. Lobelias, goldenrods, violets, jack-in-the-pulpit, and mayapple grow here. These are shade-tolerant plants that get very little sunlight.

The cool shade of the forest can be felt on the forest floor most of the year. Annual and perennial herbs and ferns make up the herbaceous layer. Filtered sunlight streams in through the summer months. After the leaves have dropped in the fall, more light enters, allowing the ground covers and woodland wildflowers to grow. They take advantage of the sunlight and bloom early, in late winter and early spring, before the leaves have fully leafed out.

The floor of the forest is blanketed with decaying leaves, twigs, fallen trees, mushrooms, and moss that form a living mulch. This is where the recycling takes place; the plant material is broken down by a number of organisms, including insects, bacteria, fungi, and earthworms, into rich soil that is ready for use for the plants growing there. These include partridgeberry, wild ginger, violets, and various other woodland wildflowers. Some are annuals, others are perennials. Mixed in among them are seedlings from surrounding trees and shrubs.

WOODLAND WILDFLOWERS

Establishing a woodland wildflower garden was one of my first priorities in my forest landscape. A large pecan tree riddled with sap wells from the downy served as the focal point. I decided to put the wildflower garden in a semi-circle around the pecan tree. The tree provided shade and the hedge along the side gave it filtered sunlight. The leaf litter had been building for a number of years and had formed a rich layer of humus, so all I had to do was loosen the soil and add mulch. The wildflowers loved it. I included wild ginger, spring beauty, Solomon's seal, and false Solomon's seal, Jack-in-the-pulpit, mayapple, and more. They soon adapted and started forming colonies. Other wildflowers arrived over the years and have firmly established themselves in the landscape.

False Solomon's Seal—*Maianthimum racemosum* (Ruscaceae)

False Solomon's seal grows in a shaded woodland setting with well-drained soils and is somewhat drought tolerant. Long narrow leaves up to six inches long with parallel veins characterize false Solomon's seal. Small white to pale yellow flowers develop in clusters at the ends of the stems. Flowers are pollinated by small bees, flies, and beetles.

Jack-in-the-pulpit—*Arisaema triphyllum* (Araceae)

Jack-in-the-pulpit is a perennial herb that grows in moist woods. It has compound leaves that are divided into 3 leaflets at the top of a long stem, usually in pairs and about 1 to 2 feet tall. The flower is a spathe with a curved hood that is green or purplish-brown, sometimes marked with pale or whitish stripes. Fruits are a cluster of bright red berries that ripen in late summer and fall. Game birds and the wood thrush feed on the berries. The root contains calcium oxalate crystals that cause a strong burning sensation if eaten raw or not prepared properly.

Jack-in-the-pulpit is a popular plant in the moist, shaded wildflower garden in well-drained soil. Plants grow singly or in colonies and can be divided and transplanted easily.

Mayapple—*Podophyllum peltatum* (Berberidaceae)

Mayapples look like miniature umbrellas emerging on the forest floor in the early spring. One can only imagine what kinds of creatures might take shelter under the canopy of the wide, deeply lobed leaves of the mayapple. Standing from one to one-and-a-half feet tall, the leaves partially hide the large solitary flower appearing in the fork where the stem branches into two leaves. Some plants have only a single stem, in which case there is no flower. Many people walk past the plant and never see the flower unless they stop and look under the leaves. They spread underground by a rhizome, forming colonies in an area.

The name "may apple" may lead one to think the fruits ripen in May. Instead, its name is referring to the flower, which was thought to resemble

an apple blossom and opens in May. In warmer regions, it begins blooming in April and reaches its peak in May. There are usually six to nine white, waxy petals, unlike apples, which have five petals.

The fruits begin ripening in July and the ripe fruit is the only part that is edible. All other parts are poisonous, including the seeds. While the plant is easy to locate in the spring, by the time the fruit is ready to harvest, most of the leaves have died back, other plants have grown up and around them, and, if you live in a region that is buggy, you have to fight the insects to get to the fruits. Finding them is most easily done by using the sense of smell. When they ripen they turn yellow and look and smell like lemons. The fruits are edible to humans and animals.

The most poisonous part of the plant is the root, which contains a bitter resinous compound podophyllin, a secondary metabolite that is a gastrointestinal irritant which, in large doses, is fatal. The root was used by the Native Americans and early settlers as a "strong purgative, liver cleanser, emetic, worm expellent," and for other ailments. Etoposide and teniposide are two semisynthetic derivatives that are used to treat several types of cancer (Foster and Duke, 2000). Penobscot Indians used the root as a cure for warts (Vogel, 1970).

Reports from the Menominee indicate that mayapple may also be used to repel the potato beetle. The whole plant was boiled and the resulting liquid sprinkled on potato plants to kill potato beetles. They claimed that it killed the eggs of the beetles in the ground as well as the beetles (Erichsen-Brown, 1979).

Mayapple is a native North American plant that grows in rich woods and shady clearings from southern Ontario and western Quebec south to Florida and Texas. It is easily cultivated by dividing the roots, which grow horizontally a few inches under the soil. They will do best in rich loam with compost added.

Solomon's Seal—*Polygonatum biflorum* (Ruscaceae)

Solomon's seal is an attractive woodland perennial wildflower that grows in moist, partly shaded areas. It has long, narrow leaves that alternate as they grow up the stem, reaching one to three feet tall. Bell-shaped greenish-yellow flowers dangle from the leaf axils underneath the arching stems. Following the flowers are the berries that turn blue-black when they ripen in the fall.

Spring Beauty—*Claytonia virginica* (Montiaceae)

Spring beauty is a native, low-growing herbaceous perennial that prefers rich, moist, fertile soil. It is one of the earliest wildflowers that adds color to the forest. Narrow, linear, grasslike leaves come up in late winter followed by the flowers in early spring. Flowers are starlike and may be white to light pink with five petals. The root is an underground potato-like tuber that is edible, sometimes referred to as fairy spuds. It reproduces with its tuber offsets and reseeds. Can be transplanted easily into your forest landscape.

Toothwort—*Dentaria diphylla* (Brassicaceae)

Toothwort is an attractive, native perennial that only shows up during the winter months, blooms in early spring with four white petals, characteristic of the mustard family, and then dies back during the summer months. Toothwort, pepper-root, crinkle-root—these are just some of the common names given to this low-lying woodland herb. Toothwort transplants easily into the landscape. It naturally grows in rich, moist, slightly acidic soils in mature forests or shaded meadows.

Toothwort grows in the winter months after all other herbs have died back. Leaves are in pairs and divided into three leaflets that have three broad, coarsely toothed leaves with prominent white veins. The dense roots form a mat and appear as patches of green that stand out on the forest floor.

Partridgeberry—*Mitchella repens* (Rubiaceae)

Partridgeberry is a trailing, evergreen vine in the bedstraw family that sprawls on the forest floor. It is a native that grows throughout the eastern part of the United States, from the mountains to the sea. It can grow in dry, sandy soil as well as moist, heavy soil, mostly in the shade. It is most easily propagated by division or cuttings. The woody stems have paired, roundish leaves about one-half inch long and often with white veins.

In late spring, patches of white appear as pairs of small, white flowers covering the ground like a dusting of snow. The flowers have four petals that form a tube and unite at the base. It takes two flowers to make a fruit. In one flower, the pistil is long and the stamens are short while the other flower has a short pistil and long stamens. This prevents self-fertilization and requires that both flowers be pollinated, primarily by bumblebees, to produce fruits. Where the two flowers join, a single, red, berry-like fruit develops that retains the two blossom scars as it matures, giving it the nickname “two-eyed fruit.”

The fruits turn bright red in the fall and remain on the plant throughout the winter, making them easy to spot while walking through the woods. The four-petaled, white flowers appear early to mid-summer, covering the forest floor with a white carpet. Flowers are tubular and in pairs with the ovaries fusing at the base.

The berries are edible and ripen in the fall, often remaining on the vine throughout the winter. Although they are lacking in taste, they make a colorful addition to fruit salads and a thirst-quenching nibble while on the trail. Small mammals including squirrels, foxes, raccoons, and chipmunks eat the berries.

The species name, “repens,” is the Latin word meaning to creep or crawl, and describes its low-trailing growing habit on the forest floor. Partridgeberry is an evergreen, woody, herbaceous perennial that grows in the shade of the forest. It can be successfully added as a groundcover to your shade or woodland wildflower garden.

Wild Ginger—*Asarum canadense, Hexastylis* spp. (Aristolochiaceae)

As a child I was introduced to ginger (*Zingiber officinale*) in the form of ginger ale as something you would drink if you were feeling nauseous or had a cold. Years later, while in college, I became familiar with wild ginger (*Asarum canadense*), not to be confused with the ginger of my childhood. The ginger from my childhood originated in the tropics and is in the ginger family (Zingiberaceae). The wild ginger I became familiar with in college is a native. Then I met its close relative, heartleaf ginger (*Hexastylis* spp.), in the Birthwort family (Aristolochiaceae) of which there were several species, all with similar uses.

Wild ginger grows close to the ground on the forest floor in mature hardwood forests. *Asarum canadense* is deciduous while the genus *Hexastylis* is evergreen, making it easy to spot and identify in the winter months.

Both *Hexastylis* and *Asarum* have large heart-shaped leaves. They have small maroon to brown cup-shaped flowers with three petals coming together at the base. Those of the genus *Hexastylis* have been described as resembling little brown jugs, another common name. The flowers begin developing in late winter and open up early in the spring. Those of the

genus *Hexastylis* appear earlier than those of the genus *Asarum*. Flowers are hidden beneath the leaves and are easily missed. To see them, lift the leaves carefully from around the plant. Because the flowers are on the ground, they rely on ants or beetles to pollinate them.

Both plants spread underground by horizontal stems just beneath the surface and are fairly easy to dig. Roots are much smaller than those of the tropical ginger and look more like yellowish-white strings coming from the plant. Use kitchen scissors to snip off small sections of the root and then replant. Wild ginger is easy to transplant and will form a small colony in a few years. Wild Ginger makes an attractive ground cover and can be grown easily in shady areas. It likes well-drained, rich soil and can be propagated by root division.

NATIVE MOSSES

Mosses are primitive plants that form a green carpet on the forest floor. They belong to a group of plants called bryophytes that lack true roots. Instead, they have rhizoids that serve as a holdfast for the plant. Instead of flowers, fruits, or seeds, they have spores for reproducing and also spread vegetatively. They grow in shady, moist soil and are dependent on water to make food and for fertilization. When they are dry, they fold their leaves or curl them up to prevent evaporation of water.

Mosses can also be a source of water in a survival situation and for filtration. During wet periods they absorb water, thus preventing flooding. They are waterproof and can be used to cover a shelter and for erosion control. Mosses are healing in that they can calm your spirit and provide a soft mat to walk across, massaging the feet in the process. They are also wound healing and bandaging.

Beneath the Surface

Without fungi, all ecosystems would fail.

—Paul Stamets, *Mycelium Running, 2005*

Beneath our feet, there is an invisible world of mycorrhizal fungi working to break down leaves, pine needles, and downed trees and logs to recycle back into the environment. If you lift a log that has been lying on the forest floor for a period of time, you will notice a network of fuzzy, cobweb-like growths underneath. This is the mycelia which, in one phase of its life cycle, will produce mushrooms. The fruiting mushrooms from the mycelium forms a partnership with a plant species and forms a sheath around the roots. Most plants have mycorrhizal partners.

MYCORRHIZAL FUNGI

Mycorrhizal fungi form direct associations with roots and other tissues of plants. They aid plants in obtaining nutrients and water and can be more effective than just the plant's roots (Rosenbaum, 2023). Many plant species are dependent on these mycorrhizae to thrive.

SAPROPHYTIC MUSHROOMS

Saprophytic mushrooms are wood decomposers that produce most gourmet and medicinal mushrooms. Species include shiitake (*Lentinula edodes*), oyster (*Pleurotus ostreatus*), lion's mane (*Hericium* spp.), and red wine cap (*Stropharia rugosa-annulata*). All can be readily cultivated in a forest garden (Cornell Small Farms, 2022).

Decomposer mushrooms form a network of mycelia, a fungal network of threadlike cells that forms a partnership with a particular plant species and wraps a sheath around the roots. These fungi have a symbiotic relationship with the trees of the forest. Both the plant and the mushroom benefit from this partnership. If the sheath is external, the mycelium grows beyond the plant's roots and brings distant nutrients and moisture to the host plant, aerating the soil and holding it together in the process. Most plants have mycorrhizal partners. The mycelium increases the plant's

ingestion of nutrients and essential elements. The fungi receive the sugars that are secreted by the plants (Stamets, 2005).

MUSHROOMS

Mushrooms appear in a vast array of colors and shapes, growing in dark, out of the way places as well as on lawns. What we see as a mushroom is actually the fruiting body that is produced from mycelium that is underground where it is breaking down plant material into food for other plants. The environmental conditions—including season, rainfall, temperature, and soil conditions—must be met for the mushroom to be produced.

Some mushrooms are edible and even medicinal, and others are poisonous. Before eating mushrooms, positive identification is a must. Find out who the poisonous lookalikes are first.

Mushrooms are spore producers and are often identified by the color of the spores they produce. Depending on the species, spores may be white, yellow, red, brown, or black. Making a spore print is one way of determining the color and to group different mushrooms for identification. To make a print, use spore print paper, if available. You can also use white and dark paper if that's what you have. You need both since some spores are light in color while others are dark.

Mushroom Spore Printing

Making spore prints for identification can be fun and is easy. Just to see the color, you don't need a print. Just look under the cap, on leaf debris, or lower caps. The gills are sometimes the same color as the spores.

To make a spore print, remove the stem of the mushroom with a sharp knife and place the cap facing downward out of the wind on spore print paper or paper that is both black and white. Cover it with a container to prevent the spores from being dispersed and leave undisturbed overnight. If the cap is too immature, it may not drop any spores. If too old, it may already have lost most of its spores.

After a few hours or the next morning, lift the container and see what's happening. To prevent the spores from smudging, spray with a fixative.

Mycoforestry

Mycoforestry is using fungi to restore the health of the forest. It can be accomplished through the preservation of native forests, recycling woodland debris, and replanting trees (Stamets, 2005).

Cauliflower Mushroom—*Sparassis crispa*

When you spot a cauliflower mushroom in the woods it looks like a head of cauliflower. It is a large yellow rosette of flattened, wavy, ribbon-like folds. It grows alone at the base of trees or decayed oak stumps. Cauliflower mushrooms can grow up to two feet across with a central stem tapering into a long taproot. They are best harvested when the leaflets are fully extended before the edges have turned brown.

Chicken-of-the-Woods—*Laetiporus sulphureus*

Chicken-of-the-woods is the first mushroom I knowingly met, other than morels as I was growing up. It was mid-summer on a foraging expedition when we came across the most beautiful sulfur-colored mushroom I had seen in the woods. Some mushroom experts on the trip identified it as an edible mushroom. Sulfur mushroom is another name referring to the bright yellow pores on the underside. Chicken-of-the-woods can be spotted a distance away by its bright orange coloring on top and sulfur yellow underneath with a yellow rim around the edge when it is at its best. It is a polypore mushroom and sticks out of the side of trees like a shelf. Chicken-

of-the-woods is a tough, solid mushroom and only the tender outer portions should be used for food (Nyerges, 1997).

Hen of the Woods—*Grifola frondose*

Hen of the woods is a large, dark gray brown when young, becoming lighter as it ages. It is a mass of branching stalks, each topped with a flat brownish gray frond that is usually no more than three inches across. It is found growing on the ground next to a tree. You can often return to the same tree, same time, each year. The amount of light apparently affects the richness of the color (Shernoff, 2003).

The hen of the woods arises from the earth pale and lumpy. Overnight it darkens and takes on its characteristic shape. The pores on the underside of the caps are white (Stamets, 2005).

Lion's Mane—*Hericium erinaceous*

Lion's mane looks like the mane of a lion, only it's white and found growing either on the side of a tree or on a log or stump. It produces a mass of non-forking white spines that cascade downward. They start out white and then turn yellowish-brown as they age. Its natural habitat is on dead or dying broadleaf trees or, most commonly, on logs or stumps (Stamets, 2005).

Lion's mane mushrooms are rich in vitamins such as thiamine, riboflavin, and niacin. They are also a good source of essential minerals such as manganese, zinc, and potassium (Begum, 2024). Health benefits include positive effects on the brain, heart, and gut. It may help protect against dementia and help relieve symptoms of depression and anxiety (Julson, 2024).

Morels—*Morchella* spp.

As soon as the ground starts getting warm and the apple trees are almost in bloom, it is time to head for the old apple orchards. This is where morel mushrooms seem to be most common. They can also be found along stream banks and under poplar and elm trees. They pop up out of the ground on warm, sunny days following a rainy spell, and they don't last long. After a day they turn brown and shrivel up.

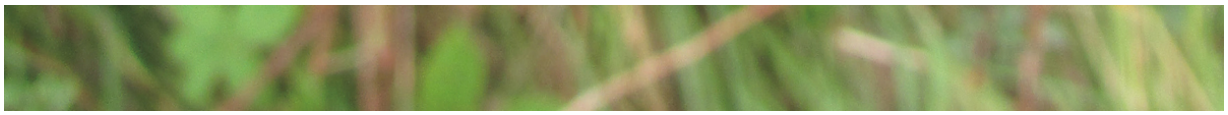
There are several kinds of morel mushrooms. One is the black morel (*Morchella elata*), followed by a yellow type (*M. crassipes*), and finally the white kind (*M. deliciosa*), which often marks the end of the morel season.

Morels have their own individual look that is different than what most people think of as a mushroom. Instead of a cap and stem, they emerge from the ground in late March and into April as hollow stems with a honeycombed head with pits and ridges, resembling a sponge.

Oyster Mushrooms—*Pleurotus ostreatus*

Oyster mushrooms grow on old stumps, usually in crowded, overlapping layers. They can be entirely white, or with caps that are gray or light brown. The gills on the underside of the mushroom blend into the short stem. The tender sections are cut off and sautéed for food (Nyerges, 1997).

According to Paul Stamets (2005), oyster mushrooms are one of the easiest to grow. Cultivating oyster mushrooms can benefit the food chain by recycling waste material into nutritional and medicinal products.



CHAPTER SIX
NATURALIZED ALIENS

If you want to get rid of a plant, find a use for it.

—Jim Duke, circa 2012

When I first moved to the property where I am living in the mid 1980s, my focus was wild edible plants. I wanted to bring as many edibles to my yard as I could find. Invasive aliens were unheard of in my world. If a species invaded an area or spread out to form a colony, it just meant more food to harvest.

It wasn't until I joined the local chapter of the native plant society that I started hearing about invasive aliens and the battle that was being waged against them. I also realized that many of the plants I had brought into my yard were on the invasive species list and were plants that I used on a regular basis. Others were naturalized. The seeds were in the soil and had germinated when the conditions were right. I took the approach of controlling the spread by using them.

Transforming the landscape from a wild, overgrown area into one of productivity begins by identifying what is already growing there. Very often it is a mix of native, naturalized, and invasive, with edible and medicinal plants mixed in. Many of the naturalized plants are labeled as invasive and efforts are usually made to eradicate them without looking into what their purpose is. Efforts are often made to destroy a plant only to find out later it was your medicine. Native plants can also be invasive but are labeled aggressive. Once you have identified what is already growing there, find out how it can be used. It is the time to separate what has value from what doesn't.

Native versus Naturalized

People often ask, “What is the difference between native and naturalized?” Both can be found growing in the wild. Native plants are those plants that were growing here when the settlers first arrived and have adapted to the environmental conditions of this region over a long period of time. Naturalized aliens are non-native plants that have been introduced to this country for various reasons. They were brought here from other countries, either by accident or intentionally to plant in gardens, for landscaping, or to stabilize the soil.

The early settlers brought with them herbs and spices to grow and use for food and medicine. Seeds from these plants were scattered and young seedlings began popping up in fields, meadows, and gardens. Some made it to the edges of forests, others penetrated them. These non-native plants included plantain for its wound-healing properties, mullein for respiratory health, burdock, chicory, and many more. Over time, many of these plants escaped the garden and adapted to the surrounding area, finding their own ecological niche among the different species in the landscape. Many have been labeled as invasive aliens and efforts are made to eliminate them, forgetting the real reason they are here.

There was also a time not so long ago when non-native plants were introduced for food and economic, medical, and landscaping purposes (Scott, 2005). There was a United States Office of Plant Introduction Program overseen by the Patent Office from 1836 until 1862 (Volk, G. and Byrne, P.) that brought in more than two hundred thousand non-native species. Multiflora rose was promoted for erosion control, highway divides, and living fences; the National Forest Service was planting Russian olive to promote wildlife habitat; kudzu was planted along the highways for erosion control, and many more.

All the introduced plants had something to contribute; some provided food and/or medicine, some were used as cover crops in agriculture or

fodder for farm animals, some improved degraded soil, and others were helpful in purifying waterways and cleaning up toxins in the soil and air. They are here for a reason.

By the turn of the twentieth century, laws were being passed to control the plants that were a threat to agriculture, livestock, poultry, or the public health. These included the Plant Pest Act, the Plant Quarantine Act, and the federal Noxious Weed Act of 1974, which focused on plants that "can directly or indirectly injure crops, other useful plants, livestock, poultry or other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or the public health" (United States Congress, 1974. Federal Noxious Weed Act, 2801-14).

There has been a battle among plant groups to get rid of any plant that's not native and replace it with a native plant. Just because a plant isn't native doesn't mean it's invasive and should be removed. Very often herbicides are used to remove the invasive plant. At the same time, there has been a decline in the bee population. There has been speculation and evidence that the use of herbicides on many invasive plants that are visited by bees could contribute to collapsing bee populations (Vollmer, 2008).

Distinguishing between what is native and what isn't is not always possible in the field. It requires getting to know the plants and which ones in your area are invasive. Try to include native species whenever possible in your landscape. Non-native species are often invasive but then native species can be equally aggressive. Non-natives tend to thrive in disturbed areas or abandoned farm fields, since they were often cultivated before they went wild.

Benefits of Non-Native Naturalized Plants

One of the benefits of naturalized plants, whether native or non-native, is their adaptability to the environment. They don't have to be replaced each year. Whether native or non-native, wild plants provide cover and shelter for wildlife. Many of them have edible and/or medicinal properties. Non-

native plants also produce an abundance of biofuel at a time when there is a need for renewable resources.

Absinthe, Wormwood—*Artemisia absinthium* (Asteraceae)

Absinthe is a perennial that was brought here from Europe and has naturalized in the northern United States in weedy, disturbed areas, in dry soils along roadsides, and pastures. It was introduced for landscaping in gardens, as medicine, and as a flavoring for drinks.

Absinthe can be recognized by its color and smell. The feathery leaves are a silvery gray-green color with a sage-like smell, making it a popular choice for landscaping. Absinthe contains thujone, a strong aromatic oil that has strong effects on the central nervous system. It contains a wide range of antioxidants and antimicrobials and is effective in detoxifying the liver (Scott, 2010).

Absinthin, a bitter glycoside, is also found in absinthe. Absinthe is a famous bitter and the main flavoring agent in the absinthe liqueur.

Barberry—*Berberis vulgaris, B. thunbergia* (Berberidaceae)

Barberry is a small shrub that can grow up to six feet tall with armed branches. It is most noticeable in the fall when it produces red berries that can persist into the winter. It was introduced for its ornamental value. Leaves are small and oval-shaped and are dark green to a dark reddish color. Barbed branches spread along the forest floor, protecting it from predators. Barberry grows in open woodlands and along edges and crowds out native plants, disrupting natural ecosystems.

There is a good side. Barberry is both edible and medicinal. The fruit is mildly sweet but dry and mealy. Berries contain vitamins, minerals, sugars, organic acids, and pectin and are used to make jams, preserves, and sauces.

Barberry stems, root bark, and fruit contain alkaloids, including berberine, the same compound that is found in goldenseal, with antimicrobial properties as well anti-inflammatory and immune-enhancing

activity. It also contains vitamins A, B, and C, selenium, zinc, quercetin, rutin, caffeic acid, kaempferol, and chlorogenic acid (Scott, 2010).

Chickweed—*Stellaria media* (Caryophyllaceae)

Chickweed is a naturalized herb that is commonly found in gardens, yards, and any disturbed soil where it gets plenty of sunlight. Chickweed can be invasive and comes up in flowerpots, garden beds, in the pathways, and all over the yard, forming a thick mat in many places. The best way to control chickweed is to harvest the young shoots as they emerge, pulling them up by the roots. By early spring, it is blooming with small white flowers with five petals. However, the petals are divided in half, so it appears there are ten. Leaves are in pairs with smooth margins on long stems.

Dandelion—*Taraxacum officinale* (Asteraceae)

Dandelions are so common and have been around for so long that many people think they're native. It is believed they came here with the early settlers, possibly on the Mayflower, for their medicinal uses. Dandelion is edible and medicinal. All parts can be used.

Even though dandelions are a common sight in people's lawns and are difficult to control, they are not considered invasive except in Alaska and Oregon (jravirginia, 2021).

Dock, Yellow—*Rumex crispus* (Polygonaceae)

Yellow dock, also known as curly dock due to its curly leaf edges, is a perennial herb that can be found in a variety of habitats, from dry to moist, sun or shade, and tolerates most soil types. The long, narrow leaves form a basal rosette with a deep taproot. It mostly dies back in the winter.

Garlic Mustard—*Alliaria petiolata* (Brassicaceae)

I first learned about garlic mustard in the early 1990s at a wildflower symposium at Wintergreen. Dr. Jim Duke was giving a talk on Medicinal Plants and garlic mustard was high on his list. At that time the National

Cancer Institute was interested in studying the plant since it contained cancer preventives of both garlic and mustard. Excited to learn more about it and to try it as an edible, I eagerly brought one home with me and planted it in my herb garden. I nursed it along until summer arrived. My sandy soil and the heat and humidity in southeast Virginia were too much. It finally died without me ever getting a chance to try it.

A few years later I started hearing about garlic mustard as an invasive alien. I had yet to see it growing in the wild. Then one summer I went to central Ohio to do a program in a natural area. While scouting out the area I saw a lush, light green groundcover that covered the entire forest floor. I looked more closely and realized it was garlic mustard seedlings. I took a young leaf, crushed it, and put it up to my nose. Definitely a strong garlic and mustard smell. I had found garlic mustard. It had invaded the forest.

Garlic mustard is a biennial plant in the mustard family. Controlling it can be done by pulling up the first-year plants by the roots before it has bloomed and produced seed. This is also the best time to harvest the plant for food.

Japanese Honeysuckle—*Lonicera japonica* (Caprifoliaceae)

One of the first indicators that spring has arrived is the fragrant scent of honeysuckle wafting through the air. Childhood memories flood my mind as I'm taken back to my early days on the farm where the honeysuckle formed thickets along the edge of the field where we would be working. We would look for those flowers that were at their peak. As they age, they go from being white to yellow before dropping to the ground.

Tasting Honeysuckle Nectar

Select your flowers by their color and vibrancy and pick the flower just below the first set of leaves. Gently pinch the flower right above the greenish base and lightly pull on the base to draw the style of the

flower out through the bottom. Keep pulling and soon you will see a drop of nectar at the end of the tube. Put this to your lips to get a tiny taste of sweetness.

A fuller flavor of honeysuckle can be captured by infusing the flowers in cold water for several hours, or overnight, to produce a refreshing, cooling drink on a hot, summer day. The flowers can also be dried for later use.

Japanese honeysuckle is a climbing vine with white to pink, fading to yellow, fragrant flowers from late spring into fall. As the leaves travel up the stems, they become simple, oval, and in pairs. The fruits turn dark in the fall when they mature. There is a native honeysuckle but without the same properties as the Japanese honeysuckle. The fruits of the native honeysuckle turn orange to red when they mature.

Japanese honeysuckle was introduced in this country in 1806 from eastern Asia for its ornamental use plus erosion control, wildlife forage, and cover (University of MN, 2025). It grows in full sun and will climb over whatever gets in its way to reach the sunlight. It grows best along the edges. Honeysuckle is mostly spread by birds who consume the berries and disperse the seeds wherever they go.

I became aware of the invasive nature of Japanese honeysuckle when I bought my property, a small patch of woods. Along the edges and climbing high into the trees was the honeysuckle that had gotten its start when the forest was still young, probably brought in by birds. I set to work to remove it by hand, clipping it at the base, pulling up the roots when I could, and then pulling down the large canopy of vines. These I put on the burn pile. It worked. Small patches would pop up occasionally but nothing I couldn’t control by hand. Since honeysuckle likes a lot of sunlight, once the forest had established itself, it was no longer able to grow like it did before.

I still like having honeysuckle nearby and have kept a corner in my yard dedicated to honeysuckle. I remove it after it has finished flowering knowing it will come back next year. Mowing around it keeps it contained.

Years ago, Dr. Jim Duke mentioned that he made honeysuckle tea in the winter to prevent getting the flu. I asked him what part of the plant he used. He replied, “Whatever I can find—leaves, flowers, or stems.” Scientific studies show Japanese honeysuckle is antimicrobial and an antioxidant and has broad-spectrum inhibitory effects against a number of ailments (Scott, 2010).

Japanese Knotweed—*Reynoutria japonica* (Polygonaceae)

As a forager, I learned about Japanese knotweed from articles written by other foragers but had never experienced it myself. I read that it could be used as an asparagus substitute and the young shoots poking through the soil in the early spring do indeed look like asparagus.

I went in search of knotweed in the wild. Japanese knotweed is in the buckwheat family, along with yellow dock and sheep sorrel, and has the same acid flavor. It occurs in disturbed and waste areas, vacant lots, and roadsides, often in dense, coarse stands three to eight feet high. The green stems are mottled and look like they have been dusted with a fine, white powder and divided into jointed sections. The joints are swollen and encased in a thin, papery sheath. The leaves are simple and alternate, pointed at their tips, and four to six inches long. The flowers are tiny and white, produced in branched clusters in the junctions of the upper leaves.

Japanese knotweed usually makes an appearance by late March or early April. It has the appearance of an asparagus shoot and can be used as a substitute. Japanese knotweed shoots are tender and mild and very tart. An easy way to prepare them is to roast them in the oven with olive oil drizzled over them. They only need a few minutes cooking time.

After several years of searching, I finally found a lone shoot coming up in a ditch on the side of the road, barely alive. I excitedly dug it up and

brought it home with me and planted it at the edge of my yard. It transplanted well and within a few years I had a colony large enough to get my first harvest. I put the shoots on a baking dish and sprinkled them with olive oil, salt, and pepper and baked them for a few minutes. Then came the tasting test. Sour! Pure sourness. Adding spices and a sweetener enhanced the flavor. Robert Henderson in *The Neighborhood Forager* (2000) describe its taste as tangy and rhubarb-like.

Within a few years I learned first-hand about the invasive qualities of Japanese knotweed. I gave it the edge of the yard where a ditch had been dug years ago and the knotweed loved it. I contained it by harvesting roots before the shoots emerged and harvesting the shoots once they were up. Mowing around it also helped contain the patch.

Japanese knotweed was introduced at the beginning of the twentieth century for its use as a screen and as an ornamental. It didn't take long for Japanese knotweed to lose favor as an ornamental.

After doing more research on Japanese knotweed, I realized it had a lot more benefits than just food. Underground rhizomes are rich in transresveratrol, an active form of resveratrol that is an antiaging compound and is best absorbed and utilized by the body (Vital Plan). In his book *Healing Lyme* (2015), Stephen Buhner lists the many herbal actions for Japanese knotweed which are mainly attributed to its high content of resveratrol, produced in greater concentrations than any other plant in the world. It is widely used for the treatment of Lyme disease. In addition to its medicinal benefits, Japanese knotweed has an abundance of vitamins, minerals, and antioxidants that help the body to process numerous toxins and cancers (Scott, 2010).

If you want to experiment with Japanese knotweed, look for a patch that has gone wild rather than growing it yourself. Once you have located it, control it by harvesting it, making sure the soil it is growing out of is not

polluted. Avoid roadside ditches since that seems to be where it is most abundant and also the most polluted.

Kudzu—*Pueraria montana* (Fabaceae)

Known as the vine that ate the south, kudzu was introduced to this country from Japan in 1876 as an ornamental and for erosion control, especially along highways. It thrives in areas with mild winters and hot summers.

A fast-growing semi-woody vine in the pea family, kudzu has alternating compound leaves with three oval-shaped leaflets. Where the leaf nodes touch the soil, roots develop, making it difficult to find the original taproot, which is used to make kudzu flour. The roots are large, swollen tubers that go deep into the soil. Sweet-smelling pea-like purple flowers develop in elongated clusters during the summer months, so fragrant you can smell them just driving down the road where they are growing. The fruits are elongated, bean-like pods.

Kudzu is considered to be an uncontrollable, invasive pest by many due to its growth habit of growing in, around, and over everything in its path. Others have discovered that the plant is not as persistent as some used to think. It can be eliminated either by repeated cuttings, or by allowing livestock to graze on it. That livestock eat kudzu demonstrates that it is a good forage and hay crop. It can provide silage for farmers who have run out of corn. Once established, kudzu doesn’t need to be watered, fertilized, or replanted.

Kudzu has another use. It has been used for thousands of years for preventing alcohol abuse. Studies have shown consuming kudzu decreased alcohol consumption.

Kudzu is edible. Leaves, flowers, and roots are used. A starch that is a rich source of carbohydrates, fat, fiber, protein, vitamins, and mineral is obtained from the roots (Scott, 2010).

Mimosa—*Albizia julibrissin* (Fabaceae)

The fragrant scent of the pink, fluffy flowers of mimosa in the spring takes me back to my childhood. It was one of the first trees that was planted in the front yard after we moved into our new home. I watched as it grew into a small tree and finally, after a few years, produced its flowers. They made me feel happy.

Many years later when I moved into my new home on a farm in a rural area, I planted a mimosa tree in my front yard. Butterflies, hummingbirds, and other pollinators visited the tree. And then came the pods filled with seeds that were carried by the wind far and wide. A few years later I started

seeing mimosa trees springing up in the countryside and realized they were coming from my one tree. I had populated the entire area with mimosa.

Mimosa is native to the Middle East and was introduced in the United States as an ornamental, it is believed in the 1700s. It grows in a wide range of soils in warm environments and adapts well to wet and dry conditions. It is a fast-growing tree, reaching heights up to fifty feet. Leaves are compound and fern-like in appearance. Flowers develop in the spring and last until mid-summer. Clusters of pink fluffy flowers with silky threads fill the air with their scent.

As it turns out, mimosa has properties that make you happy. It is one of the most common herbs used for depression. The main ingredients include triterpenoids, lignans, flavonoids, saponins, and sterols with a range of pharmacological activities that include antidepressant and anxiolytic, anti-inflammation, and more (Huang, B., Wu, Y., Li, C., Tang, Q., Zhang, Y., 2023).

Mulberry, White—*Morus alba* (Moraceae)

Someone recently approached me with a leaf specimen from a mulberry tree. “Is this the white mulberry or the red mulberry?” I asked him, “Does it have berries on it?” “Oh yes,” he responded. “It’s covered with berries, some are red, some are black, and some are white.” And then added that the leaves were smooth, not sandpapery. That confirmed that it was the white mulberry tree. “Oh no,” he said. “I’m going to have to cut it down. It’s not native.”

Mulberry fruits are edible, whether they are native or non-native, and the birds love them. White mulberries are more likely to be found in urban landscapes than in rural. Birds are attracted to backyard feeders, and if there is a white mulberry tree in the area, they will eat those as well and drop the seeds throughout the neighborhood.

White mulberries can be recognized by their coarsely toothed, heart-shaped leaves that are with three to five lobes and are smooth and glossy,

whereas red mulberry leaves have a sandpapery feel to them and are rougher looking. True white mulberries have white berries, but they do hybridize, and the hybrids will have fruits that are red, white, and purple. The fruits of red mulberry are deep purple when ripe.

White mulberry has long been used to treat various ailments. In addition to the fruits, the leaves, twigs, and bark have been used for their cooling, detoxifying, and nurturing properties (Scott, 2010). The fruit is rich in several nutrients including fiber calcium, vitamin A, C, and iron. They are also rich in flavonoids, alkaloids, and phenolic acids (Ajmera, R., 2021).

White mulberry was brought to the United States from China by the British in the 1700s for the silk industry. The silkworms failed but the tree did not. It is now widely naturalized and flourishes throughout North America.

Mullein—*Verbascum Thapsus* (Scrophulariaceae)

Mullein is a non-native biennial herb that made its way to this country as a medicinal herb from Europe, northern Africa, and Asia. It is most noticeable in mid-summer when you are driving down the road. The tall flowering stalk can be seen along the roadsides and may reach up to ten feet tall. It is a common herb that grows throughout North America in abandoned lots and fields, forest edges, fence rows, and roadsides with lots of sunlight.

Large basal leaves, up to twelve inches long, form a rosette on the ground and grow through the winter. In the spring, it sends up a flower stalk with small, five-petaled yellow flowers that work their way up the spikelike raceme. These flowers can be harvested and infused in oil for ear infections. Leaves are infused in water for tea or alcohol as a tincture and used for respiratory issues. It can even be included in an herbal smoking mix for the lungs.

Phragmites—*Phragmites* spp. (Poaceae)

Phragmites is a wetland plant that has gotten a lot of attention in recent years as an invasive alien. I discovered phragmites soon after arriving in Virginia Beach in the late 1970s. On one of my early plant identification outings, I came upon a patch of phragmites that was growing adjacent to a tidal waterway. The tall reed-like grasses were blowing in the wind, singing their soothing, wispy tune. They were easy to identify. Tall, perennial grasses with a rigid, hollow stem whose height ranges from six to thirteen feet. The leaves are flat, smooth, and greenish-gray. It was the end of summer and the feathery seed plumes topped the tall, stiff stems.

I spotted a trail along the edge of the marsh going into the reeds. The tide was out so I followed the trail. It appeared that all the animals that lived in the marsh had gone this way, including raccoon, opossum, muskrat, and

numerous others. The trail eventually led me to an otter lodge, where the remains of a recent fish dinner lay outside the entry. I never spotted the otter but the strong fishy smell made me aware he was somewhere nearby.

I emerged from the marsh feeling stimulated by all the activity I had seen. It was love at first sight, the most excitement I had experienced since arriving in Virginia Beach.

It wasn't until the early 1980s, soon after the Native Plant Society formed a local chapter, that I learned about invasive aliens and the need to remove them and phragmites was at the top of the list. Some research revealed that there was also a native species and it wasn't always easy to know the difference. More research revealed the many benefits of phragmites.

I watched from the sidelines as the war on phragmites began. It started with a few random patches scattered around the marsh. The burn-and-spray method was used. The next spring everything was brown, dead, and dying. The herbicides worked. They killed everything. Slowly, as the summer progressed, the green started returning, mostly phragmites making its return and spreading. It had become a monoculture only because the herbicides killed everything else. It had a job to do. While visiting France I was shown where phragmites had been planted in ponds and waterways to remove pollutants from the water. That's their job. It's no different here. Scientific studies have shown that the common reed has the ability to remove sewage wastewater, heavy metals, and common toxic pollutants. It is the main water filter and detoxifier for cleansing wetlands (Scott, 2010).

In addition to its water filtration system, Phragmites also offer food and medicine. Young shoots and roots can be harvested in the early spring and used in a similar way as bamboo shoots. Rootstocks can be harvested year-round and boiled or roasted (Duke, 1992). Care must be taken to only harvest from waterways that are clean, since phragmites works to remove toxins from the water (Forager, 2022). Phragmites has been used

medicinally in Chinese medicine, Native Americans, and as a western botanical in folk medicine.

There is a native phragmites, *Phragmites americanus*, known as common reed, that occurs in small, loose colonies in mostly freshwater marshes. For a small pond area or in a graywater area in your landscape, the native phragmites is particularly effective at purifying water (Hemenway, 2009).

Plantain—*Plantago lanceolata, P. major* (Plantaginaceae)

Plantain is a European native perennial herb that followed the settlers to this country. It has a reputation of following the settlers wherever they went, giving it the common name Englishman's foot. Plantain is a world traveler showing up in lawns and fields, along roadsides, and other disturbed areas. It grows well in compacted soil and helps to break up the hardpan layer.

Plantain is a beneficial non-native herb that spreads. The best way to control it is to use it. Plantain is edible and is used for bee stings, insect bites, rashes, colds, flus, and more.

Sheep Sorrel—*Rumex acetosella* (Polygonaceae)

Sheep sorrel is known to many for its sour taste. Originally from Europe, it now grows throughout the country. It is easy to recognize with its arrowhead-shaped leaves which flare at their base. Sheep sorrel grows low to the ground, reaching a height of twelve to eighteen inches tall with slender stalks. It starts blooming in the spring and continues into the summer with red flowers on the female plants and yellowish-green flowers on the male.

Sheep sorrel is a naturalized relative of the garden sorrel which also has arrowhead-shaped leaves. It thrives in acidic, sandy soil. It can be used the same way as the cultivated garden sorrel, as a salad green, a garnish, or as a tart flavoring.

Sheep sorrel has been used historically to treat inflammation, scurvy, cancer, and diarrhea. It is one of the four ingredients in Essiac, an alternative cancer treatment (Memorial Sloan Kettering Cancer Center, 2022).

Russian/Autumn Olive—*Elaeagnus umbellate* (Elaeagnaceae)

Years ago, I was working at a forestry camp in the national forest with a group of teenagers. Their assigned project was planting autumn olive trees throughout the forest to provide food for wildlife. At the same time, the National Wildlife Federation was promoting growing autumn olive for backyard wildlife habitat. A few years later it was labeled as a highly invasive alien and efforts made to eradicate it.

Russian olive and autumn olive are deciduous shrubs with silvery leaves. The leaves of Russian olive are thinner than those of autumn olive. In late spring, both species bloom with fragrant, cream-colored flowers followed by their fruits. Autumn olive has red fruits that are sweet and juicy, while those of the Russian olive are yellow-green, dry, and mealy. Autumn olive grows on the edges of forests and thrives in poor soils that are moist and well-drained soils.

Russian olive was brought to this country from southeastern Europe and Western Asia, whereas autumn olive originated from China, Korea, and Asia. They were both brought in for multiple purposes, including food and medicine. Autumn olive berries are high in antioxidants, including vitamins A, C, and E, quercetin, lycopene, and other flavonoids (Scott, 2010). Dr. James Duke grew autumn olive in his Green Farmacy Garden due to its high lycopene content, which he believed to be good for his prostate.

Autumn olive berries are edible and can be made into jams, jellies, and syrups. The fruits provide food for wildlife and the flowers nectar for insects and bees.

Sweet Annie—*Artemisia annua* (Asteraceae)

Sweet Annie is a non-native annual herb that I first learned about when I traveled to the tropical rainforest. My traveling companion brought sweet Annie with her to protect herself from malaria. Then I learned about it from Dr. James Duke in his Green Farmacy Garden where it grew in abundance. I eagerly brought it home and planted it. It flowered, produced seed, but never came back. Even though it reseeds north of southeast coastal Virginia, it did not reseed here. So now I order my seeds so I can grow sweet Annie.

Sweet Annie is a bushy annual herb that grows up to nine feet tall with fragrant, feathery leaves. Small, greenish-yellow flowers form in late summer to early fall. Sweet Annie contains high amounts of artemisinin that is used to treat drug-resistant malaria.

Thistle—*Cirsium* spp. (Asteraceae)

Thistle is a plant that brings out mixed feelings in people. They either love it or hate it. There are a number of native thistles as well as nonnative. Regardless of whether they are native or non-native, they are both edible and medicinal and provide food for wildlife. Many arrived with the settlers, possibly through livestock feed and even bird seed. They are now found throughout North America along roadsides, fields, and forest edges.

The bull thistle (*C. vulgare*) was introduced from Europe and Asia and its showy, purple, shaving-brush flowers, and spiny, deep-cut leaves are a common fixture in fields, meadows, along roadsides, and in disturbed soils of all kinds. It is a biennial which produces leaves in a rosette the first year, and then puts up a leafy stem in the second year.

Thistles are widespread and a bane to cattle farmers who spend hours chopping the thistles out of the fields. All thistles have sharp spines on their edges. The leaves are irregularly lobed and vary in size between the different species. A fuzzy flower stalk develops in the spring topped by a thistle head with composite flowers made up of tiny florets. Color varies between the species from pink to purple and even yellow with the native, yellow thistle. Following the flowers are numerous seeds carried by the wind with the thistle down to which they are attached.

Thistles are edible and medicinal. The flower stalk before the flower bud opens can be cut at the base, peeled, and eaten like celery. Various species of thistle have been used in herbal medicine for years. Generally speaking, they are known as liver cleansers, the most known one being the milk thistle (*Silybum marianum*). Thistles are antimicrobial, antioxidant, and good for cardiovascular health (Scott, 2010).

Wild Mustard—*Brassica* spp. (Brassicaeae)

Wild mustard is an annual herb that belongs to a large group of plants scattered around the world. They come up in gardens and fields where they have escaped cultivation and can be used in the same way as their cultivated

relatives. Leaves are toothed or deeply lobed and may be bristly or smooth, depending on the species. All mustards have flowers with four petals. The color varies from yellow to white or even pale lavender. Fruit capsules are long and narrow with a conical beak with seeds that are smooth, round, and dark in color.

In areas with mild winters, wild mustard grows through the winter, providing a spicy, pungent flavor to your food. Wild mustard is more bitter than its cultivated counterparts. The strong mustard taste is due to powerful sulfur-rich compounds.

CHAPTER SEVEN
THE HARVEST

There is a time and a season for everything. There is no one time to harvest. Each plant has its own time and season. There is always something available to gather. It may be in the form of wild greens, fruits, roots, or seeds. These are our food and our medicine. The earth gives year-round.

Before harvesting any plant, develop a relationship with the plant. Know when the right time is to harvest. Get familiar with its individual features and what makes it unique.

Reciprocity

The earth endows us with many gifts. But that is not enough. It is our responsibility to accept the gifts. We are the transformers. It is up to us to take the gifts offered by the earth and transform them into useful products, including food and medicine. The greatest gift we can give back to the earth is to accept her gifts with love and gratitude and use them.

The disconnect we see and hear about today is a result of the lack of interaction with the natural world. We can look at it, walk the trails, identify the plants, take pictures, but it's not until we recognize the gifts being offered and accept and use them for the purpose intended that we actually connect.

To ignore them or not to pick them when they are ready and available is almost like an insult to the earth. What I have noticed, especially with picking berries, the more I harvest, the more she produces. Once I stop picking, the berries dry up and are gone. If I miss a season and don't pick them when they're ready, I've noticed that the next year she withholds her fruits.

If you take from the earth, you must give back to the earth. What you give is an individual preference. Begin by showing appreciation. Make the area a better place by having been there. You may decide to weed around the plant to make it look better or to add an extra layer of compost or leaf mulch. There may be dead branches that need to be pruned. Spread seeds where you can to grow new plants. Add nutrients to the soil and remove invasive species that are crowding out desirable plants. Or you may add more plants to the area.

Sustainability

There are guidelines that a forager should follow when harvesting whether they own the land or not. A forager wants to know they can come back year after year to the same patch and be able to harvest. Before harvesting, do a survey of the plant to be harvested to determine how much you can harvest without hurting the population. Pick only what you need unless you plan to share it. Be sure to leave some for the wildlife and some to reseed.

Mindfulness

Mindfulness is a concept that can be applied in all aspects of life, and it is especially true in the outdoors and when foraging. I was reminded of this recently when I was gathering rose hips at the edge of the marsh. Earlier that day I had seen a cottonmouth trying to catch the last rays of sunlight before retreating back into its hibernation hole. Since it was later in the day and temperatures were dropping into the low 40s I wasn't too concerned. Out of habit I did look to see where I was putting my feet and then proceeded to pick.

The rose hips were bright red and at their peak. As I was maneuvering around the prickly brambles to reach the plump fruits growing at the ends of the branches, I suddenly got the image of the cottonmouth in my mind and froze. Looking down at my feet I

realized I was standing not even an inch away from its curled-up body with its mouth open, showing the characteristic white, cotton lining. The fangs were tucked back but quite visible. However, the tail was not vibrating and I knew he really did not want to bite me. I said, “I knew you were there. Thank you for not biting me,” and stepped away.

Another opportunity to practice awareness came on one of my morning walks to the river bordering the farm where I live. It was the end of the hunting season and animals had been on the move. I made a mental note of their tracks as I approached the waterway. There were the usual raccoon and opossum tracks; but then I saw large coy-wolf tracks, bear tracks, and big cat tracks. I looked around and wondered how many of these animals were in the woods watching me. I listened, but only heard the sounds of squirrels scurrying around to gather their nuts.

Being mindful and aware of our surroundings is always a challenge. Nature is the best teacher. We are continuously presented with opportunities to improve our awareness skills. Being aware and fully present, in the now, while engaged in our foraging activities, is a skill that can be developed. The benefits are many. Clearing our minds and focusing on the present not only deepens our connection with the outdoors but it can also help to reduce stress and anxiety. When feeling tired, it can actually be energizing to spend time in nature and practice mindfulness (Irving, J. A., Dobkin, P. l., & Park, J., 2009).

Wild Greens

When you look across a lawn that hasn’t been sprayed with herbicides, you see green, even in the winter. Notice there are different shades of green. Wild plants often grow in colonies and have their own unique shade of green. Upon closer inspection, you will notice the leaf shape differs among

various plants. And if allowed to grow, most will eventually bloom. This is the best time to identify them.

Stepping into the outdoors is like stepping into a wild supermarket. There's an abundance of food, just waiting to be picked. But it's more than just food. Food is medicine and it grows all around us. The green leafy plants are high in phytonutrients, including vitamins A, C, beta carotene, calcium, iron, magnesium, and more. Through the process of photosynthesis, they capture the sunlight and transform the energy into food. Because leaves receive most of their energy during full sunlight, it is best to harvest them mid-day. If it is a flowering herb, harvest before the plant has reached its peak flowering time.

Not all greens are edible. Before you begin picking, learn to distinguish between the individual plants, identify the potentially toxic ones and poisonous look-alikes, and then identify which ones have edible and medicinal value.

Chlorophyll

Green plants contain chlorophyll. Chlorophyll builds the blood and stops the spread of bacteria, fungi, and other microorganisms. Leafy greens support cleansing the gastrointestinal tract. All green plants contain carotenes that are converted into vitamin A when chlorophyll activates enzymes that produce vitamins E and K (Pitchford, 2002).

Bitters

Many wild greens taste bitter. People often find the bitter taste distasteful and avoid it. And bitter does indicate toxicity. However, some bitterness is good. Bitters support healthy digestion and cleanse the liver. They stimulate the liver to produce bile that breaks down fats and toxins and promotes the flow of bile from the gall bladder.

Bitter herbs are the source of herbal cocktails. The bitters used are highly concentrated roots, leaves, and flowers infused in alcohol and used

to stimulate the appetite and to soothe digestive issues. They are also used for circulation, nausea, fever, and coughs and colds (Bobrow, 2015).

Late winter and early spring are the best times to harvest greens. Chickweed, bittercress, dandelion, and wild mustard species are among the greens that are available. Originally planted by the early settlers as their food and medicine, these same species now grow wild and can still be used in the same way for food and medicine. They have become naturalized and are seen as weeds by many who don't know, and efforts are made to get rid of them. If you want to get rid of them, get to know them and, if edible, eat them.

Vitamins and Minerals

Most of what people refer to as weeds are in fact edible greens. Not only are these greens edible, but they also provide us with vitamins, minerals, and other much needed nutrients. Instead of taking vitamin supplements, eat multi greens on a daily basis.

By late winter the annuals start blooming and preparing to go to seed. Flower buds and flowers on many of these are edible. Once they have produced seed, they will die back and won't be seen again until the fall when they will reemerge with the cooler temperatures.

WINTER AND SPRING GREENS

Winter is the time when most wild greens are available and abundant where the winters are mild. Many of the greens that you have been seeing through the winter will be replaced by a spring crop of wild greens. Winter greens include chickweed, bittercress, peppergrass, dandelion, and heal-all.

Chickweed—*Stellaria media* (Caryophyllaceae)

Chickweed is one of these herbs that blooms in the early spring and then disappears until the fall. The time to harvest it is while it is flowering. Leaves, stems, and flowers can be harvested before it has produced seed.

Regularly harvesting chickweed will encourage it to produce thick growth. Be sure to leave seeds for the fall crop.

Chickweed is edible and medicinal. It can be used in salads as an edible green, in tinctures with organic apple cider vinegar, and infused in oil to make healing salves. Chickweed is high in many nutrients, including calcium, phosphorous, magnesium, potassium, and vitamin C. As a food, chickweed can be eaten raw in salads, in pesto or herb spreads, chopped and infused with water as a tea or added to soups.

Medicinally, chickweed can be used as an anti-rheumatic, vulnerary, and emollient (Hoffman, 2003). According to Rosalee de la Floret and Emily Han (2020), chickweed is a mild expectorant and can be used to treat coughs due to dry and irritated lungs and to move mucus stuck in the lungs.

Dandelion—*Taraxacum officinale* (Asteraceae)

Dandelion leaves are edible. In mild areas, young leaves can be harvested throughout the winter and into the spring. They are bitter. The degree of bitterness varies with the age, location, and time of year. The bitterness cools and detoxifies the liver (Scott, 2010). Cooking the greens removes most of the bitterness and can be used in place of spinach in recipes.

Peppergrass—*Lepidium virginicum* (Brassicaceae)

Like most mustards, as soon as it starts getting warm, a flower stalk develops with numerous tiny white flowers with four petals borne in dense clusters at the top of the stem. Flower tops and leaves are edible and mildly spicy and make a nice addition to salads. The roots have a horseradish-like flavor and can be blended with vinegar to make a spicy salad dressing.

Poke—*Phytolacca americana* (Phytolaccaceae)

Poke is edible, medicinal, and poisonous. It’s a plant to get to know before using it. Poke emerges in the early spring from the previous year’s roots. To

locate shoots, look for the old growth from last year and young growth should be coming up around it.

Poke is a native perennial, more often thought of as a weed rather than an herb. As a food, poke should be gathered in the early spring while the plant is still under six to eight inches tall. The young leaves and stalk are edible. Remove the leaves, one at a time, peeling the stem in the process.

Whether it be leaves or stems, poke must be cooked before eating. Cover the leaves and/or stems with cold water. Bring just to the point of boiling. Pour off the water and cover a second time with cold water. Again, bring just to the point of boiling and then drain. It is now ready to eat or include in any recipe that calls for asparagus or cooked greens.

Poke is often referred to as “poke sallet,” and interpreted as “poke salad.” I have heard many stories of those who have made a salad of the poke greens, only to spend the next several hours (or days) throwing up. Poke should never be eaten raw. The phytolaccine alkaloids cause intense vomiting and diarrhea. The root is the most poisonous part, and also the part with the most medicinal value. It is currently being studied for its anticancer and anti-HIV potential. The plant juice may cause dermatitis in some people. Using gloves to gather and prepare the young plants can help prevent intense itching later (Duke, 1997).

Berries are also poisonous, although it is the seed that is the most poisonous. Children have reportedly been poisoned from eating too many berries or from making poke berry juice and drinking it raw. There are stories of those who have used the berries for frostings, candies, and pies. However, I am reluctant to do so and would advise those who do to use caution and to always cook the berries first.

Birds eat the berries. Mourning doves, bluebirds, mockingbirds, and robins flock to the bushes in the fall, consuming the fruits and distributing the seeds far and wide. Raccoons, foxes, and opossums may also eat the berries.

SUMMER GREENS

Wild greens diminish during the hot, dry summer months. Unlike winter and spring greens that are bitter, summer greens are mild to bland in taste.

Lamb's Quarters—*Chenopodium album* (Chenopodiaceae)

Lamb's quarters can be harvested as soon as it starts coming up. Pinch off the roots and add the sprouts to your salad. Leaves can be picked and used throughout the growing season, either raw or cooked like spinach.

Purslane—*Portulaca oleracea* (Portulacaceae)

Purslane is a summer green and young shoots can be harvested as soon as they emerge. Leaves and stems are edible with a mild, somewhat tart taste. Stems are tender and crispy and make a nice addition to salads or as a cooked green with potatoes or other vegetables. They can also be preserved by pickling or tincturing with vinegar.

Purslane is nutritive. According to Jim Duke (1997), it is the best leafy source of omega-3 fatty acids. Omega-3s are essential fatty acids that can help prevent heart attacks by preventing blood clots that trigger it. The fresh greens also contain calcium and magnesium in a one-to-one ratio, which makes it most protective for the heart. Purslane also is an excellent source of vitamins A, C, and E.

Edible/Medicinal Flowers

There are a number of our spring wildflowers that have edible and medicinal uses. Flowers have long been used to make teas for medicines, fragrances for perfumes, and scented oils to beautify the body and soothe the spirit. Flowers were once used to make preserves, vinegar, and wine and were also candied, pickled, dried, and stewed. With the advance of technology and instant cooking, many of the more labor intensive and time-consuming methods of preparing foods were eliminated. Today, eating flowers is more a novelty than a necessity.

Flowers have a variety of tastes. Many flowers have a taste similar to their scent and range from spicy to sweet to almost no taste at all. How they are used is equally variable.

Choose a dry, sunny day to harvest flowers. The best time is mid-morning after the dew has lifted and just before they have reached their peak while they are still opening. Gather only those that are abundant and leave plenty to go to seed. Shaking the flowers gently will rid them of most of the insects but you may occasionally need to rinse them quickly under running water.

As always, there are exceptions. Evening primrose is an exception. Evening primrose flowers open in the late afternoon, as the sun is going down. The best time to harvest them is early the next morning before the sun hits them. Once the sun has started beaming down on them, they wilt.

Not all flowers are edible. The rule for eating all plants also applies to eating flowers. Positive identification first. Fortunately, plants are easiest to identify when they are in bloom.

Almost as important as knowing the identity of a plant is knowing where it is coming from. The plant should be in an area that is free of sprays and pesticides. Avoid harvesting near the road, as tempting as it may be.

Chickweed (*Stellaria media*) Flowers are small and white, with five divided petals that give the appearance of ten petals. The flowers and tops can be harvested and added raw to salads.

Elder flowers (*Sambucus canadensis*) appear in late spring with five petals that are about one-fourth inch wide and mildly fragrant. They can be used to make tea, tincture, or champagne.

Evening primrose (*Oenothera biennis*) flowers, harvested early in the morning before the sun hits them, are mildly sweet.

Mustard (*Brassica* spp.) species flowers are spicy and strong in taste and are best when used in salads or infused in vinegar.

Redbud (*Cercis canadensis*) flowers are edible, having somewhat of a sweet-tart flavor. They add bright colors to salads, jello, or hors d'oeuvres as well as vitamin C.

Whatever flowers are left behind, in a few weeks will become pods. It is while the pods are developing that the distinctive heart-shaped leaves begin forming, partially hiding the flat pods. The young pods are edible when they are between one to two inches in length. This is when they are most tender. As they mature, they become tough and not palatable.

Sweet Annie (*Artemisia annua*) flowers and green leaves have a sweet and pungent smell when crushed.

Violets (*Viola* spp.) are mildly sweet and make excellent dessert toppings or violet vinegar.

Wild Rose (*Rosa* spp.) has a fragrant scent that is uplifting to the spirit. Petals can be dried and used to make teas or tinctures.

Wood Sorrel (*Oxalis stricta*), known by some as sour grass, has small, yellow flowers with five petals and a tart taste.

Wild Fruits

Fruits are the seed-bearing parts of plants and include berries, legumes, and nuts. Wild fruits are often much smaller than their cultivated counterparts and often go unnoticed. Many of these fruits are edible and provide health and medicinal benefits. Some can be eaten raw while others can be cooked or preserved for future use.

Fruits have natural sugars and satisfy the need for refined sugar and artificial sweeteners. Fruit also contains valuable minerals, vitamins, enzymes, and fiber (Pitchford, 2002).

BERRIES/DRUPES

Berries provide food and medicine. Ancestors of cultivated berries still grow wild and have concentrated flavor and sweetness. Berries are strengtheners and blood builders. They contain antioxidants and are cooling.

The color of the berry can be attributed to flavonoids and are known as capillary healers. Syrups, jellies, and sauces are a way to administer medicine in a way that tastes good and are generally made with juices extracted from fruits.

Eastern Red Cedar, Juniper—*Juniperus virginiana* (Cupressaceae)

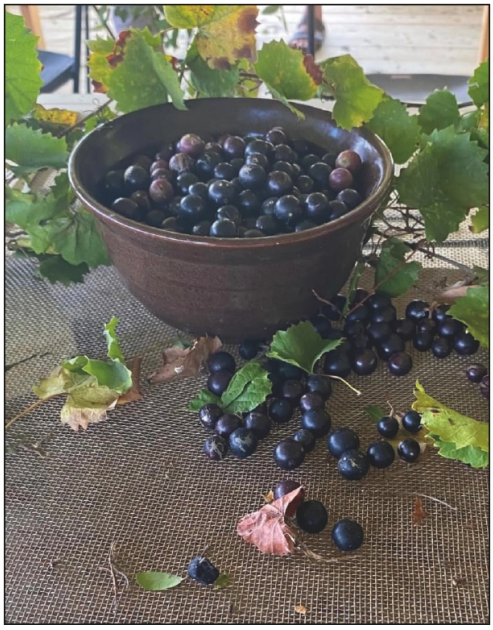
Juniper berries are used as a seasoning and for making teas, tinctures, and oils. The wood is light and durable and used for manufacturing chests, furniture, and other products. Oil of cedar is distilled from the leaves and wood and used in polishes, medicines, and perfume.

Juniper berries have traditionally been used for flavoring in a variety of dishes, including sauerkraut and wild game. The flavoring in gin (derived from genièvre, the French word for gin) comes from juniper berries (Couplan, 1998).

There are male and female cedar trees. If you have a cedar tree that doesn't produce berries it is probably a male. The male trees have small pollen-producing cones. Berries should be gathered when they have turned dark blue and are juicy. Blue-green clusters mature in late winter or early spring. They can be used fresh or dried and stored for future use. To dry them, clean first by floating in a pan of water, then comb your fingers through to remove needles and other debris. Allow to dry before spreading in a shallow pan. They can be air-dried or dried in a dehydrator. After they have dried, store in an airtight container until ready to use (Henderson, 2000).

Muscadine Grape—*Vitis rotundifolia* (Vitaceae)

Grapes turn dark purple to black when ripe. Scuppernongs are lighter in color and are sometimes referred to as the blond muscadine. All grapes are edible, but some are sweeter than others. Most grapes are sweet to eat straight from the vine and make excellent jelly, pies, and wine. Since the fruits contain lots of natural pectin, jelly can be made without purchasing commercial pectin and honey can be substituted for sugar.



To extract the juice, cover the grapes with water in a saucepan and bring to a gentle boil. Continue to cook for about 15 minutes and then strain through a food mill to separate the pulp from the seeds.

Muscadine grapes are among the richest sources of antioxidants (Special Feature, 2008). It is an excellent source of resveratrol, dietary fiber, essential minerals, and carbohydrates.

Passionvine—*Passiflora incarnata* (Passifloraceae)

Passionflower is a native herbaceous vine that is common in the southern states. It is a fast-growing plant that climbs over fences, trees, shrubs, or anything that will support it. It has large, deeply lobed leaves with tendrils in the leaf axils. The large, whitish-purple flowers are the most distinctive

characteristic and appear during the summer months. A fringe of thread-like filaments grows out from the base of the petals and rests on them. Following the flowers are the fruits which are initially green and then turn yellow as they ripen. The juicy pulp inside is edible and can be made into a refreshing juice drink.

The first time I bit into a passionfruit it reminded me of a sweet grapefruit. It was yellow and wrinkly and I wasn't sure what to expect. But when I tasted it, I scooped out the entire pulp, seeds and all. I was able to bring enough home to make some juice. The juice can be used to make jelly or pies. However, small mammals, including raccoons and opossums, love the fruits and consume most of them before I can get to them.

Passionflower produces alkaloids and cyanogenic glycosides which are picked up by the caterpillars as they feed on the leaves, making them distasteful to birds and other animals. The leaves and stems, however, are medicine for us. They are used as a nervine and a sedative and for insomnia, anxiety, neuralgia, and nervous headache. Alkaloids and flavonoids have shown sedative activities in animals (Hoffman, 2003).

Persimmon—*Diospyros virginiana* (Ebonaceae)

When I start seeing roadside vegetable stands stocking up on pumpkins about the middle of October, I know it's time to track down the persimmons. Before I had them established on my property, I would travel great distances to pick them. Fortunately, now all I have to do is walk out my back door, do a walk-about in the yard, and pick them as they fall before the raccoons and opossums have a chance to get them. They can have the ones at the top of the tree.

There is a skill involved with harvesting persimmons. It's all in the timing. Persimmons begin dropping before they are fully ripened, usually from high winds. If it is firm and plump, with a peach color and looking beautiful, it's not ripe. A ripe persimmon will be deep orange, somewhat mottled in appearance, and feel soft, but not mushy when touched. If you try picking the persimmon from the tree, it is probably not ripe.

Eating an unripe persimmon produces a sensation unlike any other. I compare it to licking a chalk board, leaving your mouth feeling dry and puckery. This sensation is due to the high tannin content found in unripe persimmons. They also have a high alum content which contributes to the puckering-up effect. Ripening changes that. Some believe you have to wait for a frost to replace the alum with sugar, making it more sweet and less astringent. However, in the southeast, if you wait for a frost, the opossums and raccoons will have gotten them all. It's more a matter of ripeness. When fully ripe, they are one of the sweetest fruits there is.

Persimmons look like miniature pumpkins and the pulp can be used any way you would use pumpkins. To separate the pulp from the seeds, run the fruits through a food mill or a colander. The pulp can be used in cakes, pies, puddings, cookies, and other baked goods.

The fruits are high in vitamins and minerals, including potassium, manganese, and vitamins A, C, and B (Kubala, 2023). Persimmons have a

short shelf life but can be frozen to be used later. To freeze, simply place them whole in a freezer container, label, and date.

Predicting the Weather

What kind of winter are we going to have?

Ask the persimmon tree—she will tell you. The secret lies within her seed. Cut the seed in half, lengthwise, and inside you will find either a fork, a knife, or a spoon. If it is a fork, you can expect a mild winter with plenty to eat. If it is a knife, it is going to be biting cold, so cold it will cut through you. If it is a spoon, you're going to be shoveling snow.

Sumac—*Rhus* spp. (Anacardiaceae)

There are about fifteen species of sumac scattered throughout the United States. In the East, there are at least three species that are fairly common. Smooth sumac (*Rhus glabra*), staghorn sumac (*R. typhina*), and winged sumac (*R. copallinum*).

Harvest time depends on the species. The smooth and staghorn sumac begin blooming in mid-summer, with clusters of small, pinkish flowers that quickly develop into small, one-seeded fruits. When the fruits turn bright red toward the end of the summer, they are ready to pick. About that time, the winged sumac begins blooming. Their flowers are more of a yellowish-green color. The fruit is crimson red when it ripens in late September and October. By mid-September they are ready to pick.

The fruits grow in clusters and are relatively easy to pick. It is best to harvest them soon after they have ripened and before a rain. Once they have been harvested, spread them out on a screen to dry for several days.

Once the fruits have dried, they can be stripped from the stems and steeped in hot or cold water to make a refreshing, cooling tea. A hot infused tea gives quicker results, but a cold-water infusion has a fruitier flavor and has to steep longer. The water will turn red when it is ready and should be strained through a filter to remove the hairs. Sweeten to taste or mix with other herbs.

Sumac is tart and is useful as a seasoning once the seeds have been removed. Begin by removing the individual fruits and place in a blender and process for a couple of minutes to remove the red, fluffy outer part of the fruit from the seed in the center. Pour through a fine strainer and rub the mixture until the red fluffy material separates from the seeds and falls through the strainer, leaving the seeds behind. Spread the fluffy powder onto a baking sheet lined with parchment paper and roast in the oven at 300°F for about five minutes. Let this cool and store in an airtight jar.

Wild Black Cherries—*Prunus serotina* (Rosaceae)

Black cherry fruits begin ripening in July in southern areas and August on higher elevations and farther north. They are about one-fourth inch in diameter and turn almost black when fully ripe. In the center is a single stone. They can be eaten raw off the tree for a thirst quencher or made into a juice by putting into a jar, mashing, and then pressed through a sieve.

Boiling them for 10 to 15 minutes helps to release the juice from the seed. The juice can then be used to make jelly or wine.

Even though the fruits are edible and the bark is medicinal, bark, leaves, and seeds contain a glycoside, prunasin, which is converted to hydrocyanic acid (HCN) as it decomposes. Cattle have been poisoned from eating wilted foliage of wild cherry trees and children have been poisoned from eating too many cherry pits.

Black cherry serves as the host plant for a number of butterflies and moths including the cecropia moth, polyphemus moth, imperial moth, and io moth as well as the tiger swallowtail and red-potted purple (Tallamy, 2007).

HIPS

Wild Rose (**Rosa** spp.) has hips for fruits. They ripen in the fall and are sweetest after a frost. Rose hips can be dried and used to make teas or tincture that are rich in vitamin C.

LEGUMES

Many of the wild legumes have inedible seeds. There are a few that do have edible pods and/or seeds. The beautiful redbud tree that has fuchsia-colored flowers in the spring has edible pods when they are young and tender. In late summer or early fall, wild beans mature and have edible seeds. Closely related is the groundnut, which also has edible seeds.

Legumes are rich in protein and starch, as well as fat and carbohydrates. They also contain potassium, calcium, iron, and several B-vitamins (Pitchford, 2002).

Wild Beans—*Strophostyles helvola* (Fabaceae)

Beans are easy to grow. Once established, they reseed from the previous year's growth and come back year after year. They are here to stay. They especially like edges where they get a lot of light and have the support of border trees and shrubs to climb.

The very young pods, while still tender, can be harvested and used like green beans, but it is better to let them fill out. The best time is when they are green and plump before they have turned brown. Boiling the pods in water first tenderizes them, making them easier to shell.

NUTS

Nuts mature in late fall and begin dropping to the ground. They are sweet, high in protein, fat, and calories and can be stored for winter use, a time when extra fats and calories are needed.

Beech—*Fagus grandifolia* (Fagaceae)

The nuts of the beech tree have a triangular husk with weak spines that contain two triangular nuts. When you walk into the woods in mid-October and you hear the crows having a party, you know it's a good year for beech nuts. The sound of nuts falling to the ground from the crows trying to get the nuts is like rain falling. Often the nuts will only have one nut. The crow

got one, and in the process knocked the nut out of the tree, leaving the other half.

Hazelnut—*Corylus americana* (Betulaceae)

Hazelnuts mature in early autumn. Finding the nuts is a challenge. They begin ripening in late August and into September. Timing is important. Squirrels, chipmunks, and other rodents make a feast of them. You can find the shrubs by looking for the shelled nuts on the ground. It is best to harvest them while they are still green and then spread them out in an airy room to dry. When they turn brown, they are dry. Removing the leafy husk is easier if you soak them in water for a few hours. At this point they are ready to be cracked and eaten or buried in a pot to sprout in the spring.

Hickory—*Carya* spp. (Juglandaceae)

Hickory nuts begin dropping in the fall. When the hickory nut matures, the outer husk splits into four separate pieces and the nut drops to the ground. This happens about the same time the leaves turn yellow and drop. Closely related to pecans, hickory nuts have a stronger taste and thicker shell. Nut crackers don't work on hickory nuts. A pounding stone or hammer is used to crack them.

All hickory nuts are edible; some taste better than others. It's a good practice to crack and taste a nut before gathering a large quantity. Hickory nuts can be stored in baskets in the rafters through the winter. The summer heat will cause them to go rancid. Freezing them is one way to preserve them.

Hickory nuts are very nutritious. One pound of shelled hickory nuts has over three thousand calories and more than three hundred grams of fat according to the USDA "Handbook of the Nutritional Contents of Foods." The fat includes essential fatty acids shown to prevent heart disease. They also provide protein, carbohydrates, iron, phosphorus, and trace minerals.

Black Walnuts—*Juglans nigra* (Juglandaceae)

Black walnuts have been referred to as brain food due to their serotonin content. According to Jim Duke, the black walnut, which looks like a brain, is the best source of serotonin. This is befitting of the "Doctrine of Signatures" which is based on "like cures like" and that the shape or color of a plant indicates its use. In this case, the brain-shaped nut is the best source of brain food.

Walnuts begin dropping to the ground in mid-September and should be gathered soon after falling. The outer shell of the black walnut is green and looks like a green ball hanging from the tree. When the nut is mature, the walnut drops to the ground still enclosed in the outer shell. If they remain on the ground for more than a few days, they become infested with maggots and turn black. The green outer hull can be tinctured and used to treat parasites and ringworm and also to make a wood stain.

Removing the husk without getting stained can be tricky. Wearing gloves is a must unless you don't mind sporting around hands stained yellow-brown for several weeks. This stain can be used as a dye or to stain for wood. The easiest way to remove the husks is to place the walnuts in the driveway and run over them in your car. Break away the hulls and rinse the nuts in a bucket of water, removing any that float. Spread in a single layer on mats to dry. Once dry, they can be stored in a cool, dry place until needed.

The shells of black walnuts are thick and hard with deep ridges. The best way to crack the shell and remove the nutmeat is with a hammer or a hard rock and a concrete block. Position the walnut on its side and give it a good firm whack. You may have to practice a bit to develop the right technique for removing the nutmeat in large pieces.

A pound of walnuts will yield about a cup of shelled nutmeats. Place the nutmeats in a food chopper or blender for use in cookies or cakes. Due to their high caloric value and the strong flavor, they should be used in small quantities.

CAPSULES

Capsules develop from a single ovary. The walls become dry as they mature until the capsule is ripe. It will then split open to release its seeds.

Evening Primrose—*Oenothera biennis* (Onagraceae)

The fruit of the evening primrose is a capsule, a narrow seed pod that is about one inch long with four chambers that contain many little black seeds. Evening primrose is easy to spot when it is blooming with its lemon-yellow flowers that open in the evening. Come back a month later with a paper bag and clippers. Cut the seed stalk below where the capsules are developing and turn it upside down in the paper bag. As the capsules dry the seeds will drop to the bottom. After a period of time, lift the seed stalks out and strain the seeds through a strainer to remove the stems and sediment and the seeds are ready to use.

CONES

A cone is the reproductive structure of plants with overlapping scales or bracts containing pollen, ovules, or spores (Hoffman, 2003).

Eastern Red Cedar—*Juniperus virginiana* (Cupressaceae)

What appears to be a berry on the eastern red cedar is actually a cone. The fruits should be gathered when they have turned dark blue with a whitish film. The fruit should be firm but not crumbly. If it's crumbly, it's too old. Juniper berries should detach easily when mature by rubbing the stems between your fingers. Juniper berries can be used fresh or dried and stored for future use. They can also be frozen.

ROOTS

The time to gather roots is when the plant is dormant, from fall to early spring, as long as the ground is not frozen, before the plant starts showing signs of life. Some roots are perennials like the dandelion, which comes back year after year. A number of them are biennials that are forming a taproot during the winter before sending up a flower stalk in the spring. This includes evening primrose, burdock, yellow dock, and thistle.

Many of the biennials have edible and/or medicinal roots. These are best harvested in the first year. The best times to dig roots are late winter

and early spring before the flower stalk has developed.

Dandelions (*Taraxacum officinale*) are perennials. The best time to harvest dandelion roots is in the fall or in the late winter when the energy is going underground. At that time the root is filled with a starchy reserve. They also contain inulin, a prebiotic that helps the body to absorb calcium and magnesium (Scott, 2010).

Toothwort (*Cardamine* spp.) roots have a horseradish-like flavor and can be used the same way. Toothwort horseradish can be made from the roots by blending them in a blender with vinegar, salt, and a sweetener if desired.

Evening primrose (*Oenothera biennis*) is a native biennial whose roots can be dug during the winter of their first year. They are best in the early spring before they have sent up a flower stalk.

Tree Medicine

I first learned about trees in a Woody Plants class in college. The class began in January with field trips scheduled every weekend. I went to the teacher and asked him how we could learn to identify the trees in the winter when they had no leaves. He smiled and said, “You will see.”

Winter is when you can see the skeleton of the forest. The trunk, bark, and leafless branches stand out in the landscape. The smooth, light-colored bark of the beeches is a sharp contrast to the dark ridges of oaks.

It’s easy to distinguish between the evergreen trees that keep their leaves all year and the deciduous trees. Some trees hang on to their leaves even though they have turned yellow or even brown. Some evergreens have needle-like leaves while others have oval-shaped leaves.

Twigs and leaf buds also have individual characteristics that make them unique. Leaf buds are actually miniature leaves while the larger flower buds are miniature flowers. Usually, the flower buds are larger.

TREE BARK

A tree has both outer bark and inner bark. The hard, outer bark is the protective covering for the tree. It protects the tree from insects and diseases.

The inner bark provides the channels for transporting food and nutrients from the roots to the rest of the tree. The best time to harvest tree bark is in the early spring or late fall when the nutrients are on the move. Avoid harvesting from the trunk. Instead look for the lower branches and choose a place on the branch to make your cut. Prune in a way that will encourage new growth and remove damaged parts. Peel the bark using a sharp knife pointing away from you. Once peeled, spread the bark on a drying tray for several days until it has completely dried.

Black Haw, Crampbark—*Viburnum prunifolium* (Viburnaceae)

The bark of black haw is best harvested in the early spring before it has fully leafed out. Once it has dried, it can be stored and used to make tea or tincture. Black haw is used for menstrual cramps and for kidney stones (Shane, 2015).

Black Willow—*Salix nigra* (Salicaceae)

Willow bark is ideally harvested in the early spring before the leaves have fully emerged. This is when the sap is rising and the bark can be removed in long strips. Once it has been stripped, it can be dried and used to make tea or as a tincture. The bark contains salicin, the precursor to salicylic acid used to develop aspirin, with anti-inflammatory and analgesic properties. Unlike aspirin, black willow is soothing to the stomach instead of irritating (Wood, 2009). To test the potency of willow bark, take a twig and chew on it. The more it tastes like aspirin, the stronger the medicine.

Southern Prickly Ash—*Zanthoxylum clava-herculis* (Rutaceae)

Prickly ash is best when harvested in the fall. However, it can be harvested at any time of the year if needed. Fall is the time when the deer chew the prickly ash down to the ground.

Wild Black Cherry—*Prunus serotina* (Rosaceae)

The time to harvest wild cherry bark is during the spring or fall when the sugar content is higher. It is more bitter in mid-winter with cyanogens. Use the fresh bark when making a tincture or spread it out on a tray to dry it.

Wild black cherry bark is anti-tussive, meaning it suppresses coughing. A tincture from the bark is used to treat asthma, bronchitis, and other respiratory conditions (Wood, 2009). Wild cherry bark has been used traditionally for coughs, fevers, colds, sore throats, lung ailments, bronchitis, pneumonia, and other ailments (Foster and Duke, 2003).

RESINS

Resins often get overlooked in the foraging world. They are commonly used in aromatherapy and incense, but they can also be used to make salves, creams, lotions, and ointments. If you have pines in your landscape, then you will occasionally find chunks of resin that have oozed from the tree. Initially, the resin is clear and sticky and hardens as it is exposed to oxygen.

Pine—*Pinus* spp. (Pinaceae)

Pines have multiple uses. Young sprouts that have just germinated make a tasty nibble. Pine needles are used to make a tea that is rich in vitamin C.

In the spring, when it blooms, the pollen is harvested and used as food/medicine by adding to salads, breads, and drinks.

The resin that oozes from the tree when a branch breaks off or is cut into is also useful. Having grown up in a family of musicians, including fiddlers, I had often heard the term “rosin up the bow.” It turned out the “rosin” was hardened pine sap.

Later I learned this same rosin was used by fire makers with the bow drill to make a fire, because resin is also flammable. A couple of chunks added to a tinder bundle can help keep a fire going. Slivers of wood coated with resin burn like a candle. Pine knots, known as “lightwood” by some, are formed after the wood around it has broken down and is concentrated with resin. The resin can also be used to make a salve that is antiseptic and antibacterial.

CHAPTER EIGHT
THE WILD APOTHECARY

The apothecary is the medicine chest where you store the herbs that you have grown and harvested. It is where you go to get the remedies for whatever ailment you are experiencing. It is your medicine making cabinet or pantry. Make a list of the wild herbs that you are growing that can be used for nutrition and/or medicine. This will become your apothecary. Ideally the herbs in your medicine chest are those that you have grown and harvested yourself. When you grow your own medicine, you develop a personal connection to that herb, and I like to think it makes the medicine all the more potent because of it.

The apothecary evolves as a result of your foraging activities. Growing your food and medicine allows you to harvest herbs when they are in season. Consciously choosing which herbs to harvest and store for prolonged use becomes the wild apothecary. What you will discover is that they don't wait around and they don't last long. When they are ready, you have to act quickly. Come back in a week or two and they are gone. Having them nearby makes harvesting convenient.

Often the yield is more than you can use right now. If you want to extend its availability, there are ways to preserve the harvest so you can enjoy its benefits beyond its seasonal harvest time. The first step after harvesting is to take the bundle of herbs to the drying room and spread them out on a table to sort through and remove any damaged parts. At this point you have choices. You can either dehydrate them, tincture them, or use them to make vinegars and salves, depending on what part of the plant you have harvested.

Your apothecary is not limited to what grows wild. You can also include any cultivated culinary and/or medicinal herbs that you have grown to

supplement the wild herbs and provide added flavor and nutrition.

Drying

Drying herbs is a good place to begin. Even if you decide later that you want to tincture them, you can use dried herbs to make tinctures, even though some herbs are best when tinctured while fresh. When drying herbs, watch, and when they are dry, store them in a jar with a lid. Over-drying can reduce the potency, color, and scent. Under-drying can result in mold once it is stored in a jar. Make sure it is completely dry before storing.

Dried herbs are handy to have on hand for making that cup of hot tea for whatever ails you or for enjoyment. Teas can either be made as simples or blended with other herbs as infusions or decoctions.

AIR DRYING

Air drying is the simplest and easiest method to dry herbs. Choose an area such as a porch, sunroom, or back porch and run some string across. The string should be strong enough to support bundles of herbs. Tie the herbs in

small, loose bundles and hang them from the string in a dry, dust-free, semi-dark area.

DRYING RACKS

Screens attached to racks and stacked in a well-ventilated area work well for most herbs. Drying racks for hanging clothes, or other hanging racks can be used.

DEHYDRATOR

Electric dehydrators are a handy and worthwhile investment to make if drying lots of herbs. Most have a temperature setting and a fan for ventilation.

Tinctures and Vinegars

Some herbs are most potent when used fresh. Alcohol, vinegar, or glycerine can be used to extract the herbal constituents and preserve the herbs for later use. Vinegar or glycerine can be used instead of alcohol for those who are avoiding alcohol, or for children.

Herbal Syrups

Herbal syrups are extracts using herbs, water, and some form of sweetener. Sweeteners are a personal choice and can include sugar, honey, maple syrup, fruit sugar, or other natural sweetener. The syrup can be added to teas for flavoring or taken by the spoonful for medicinal uses.

Oils

Herbal infused oils are preparations that involve infusing herbs in a carrier oil to extract their culinary and medicinal properties. These oils can then be used to make salves and lotions.

Apothecary Herbs

- Ashwagandha (*Withania somnifera*)—adaptogen

- Bacopa (*Bacopa monnieri*)—mental and circulation stimulant
- Baikal Skullcap (*Scutellaria baicalensis*)—anti-inflammatory
- Beebalm (*Monarda didyma*)—antimicrobial, carminative, antispasmodic, antifungal, wound healer
- Black Cherry (*Prunus serotina*)—antitussive, suppresses coughs
- Black Haw (*Viburnum prunifolium*)—antispasmodic; helps relieve menstrual cramps
- Black Willow (*Salix nigra*)—relieves headache, pain, inflammation
- Boneset (*Eupatorium perfoliatum*)—for fever
- California Poppy (*Eschscholzia californica*)—sedative and pain reliever
- Chanca piedra; Stonebreak (*Phyllanthus niruri*)—supports kidney and bladder health
- Cleavers (*Galium aparine*)—lymphatic cleanser
- Dandelion (*Taraxacum officinale*)—promotes digestion
- Echinacea (*Echinacea purpurea, E. angustifolia*)—boosts the immune system
- Elderflower (*Sambucus canadensis*)—diaphoretic; helps with colds and flu, fever
- Eleuthero (*Eleutherococcus senticosus*)—adaptogen; boosts the immune system
- Feverfew (*Tanacetum parthenium*)—helps to relieve migraines; fevers
- Goldenrod (*Solidago* spp.)—relieves allergies, anti-catarrhal, anti-inflammatory
- Hawthorn (*Crataegus* spp.)—hypotensive, cardioprotective
- Heal-all (*Prunella vulgaris*)—promotes healing for wounds, infections, and other ailments
- Hibiscus roselle (*Hibiscus sabdriffa*)—nervine, sedative, diuretic
- Hops (*Humulus lupulus*)—sedative, calming
- Indian Pipe (*Monotropa uniflora*)—sedative

- Lemon Balm (*Melissa officinalis*)—calming, relaxing herb
- Linden (*Tilia americana*)—sedative; helps with respiratory problems
- Meadowsweet (*Filipendula ulmaria*)—supports digestion
- Milky Oats (*Avena sativa*)—nerve tonic
- Mimosa (*Albizia julibrissin*)—mood elevator, stress
- Motherwort (*Leonurus cardiaca*)—relieves tension, anxiety
- Mullein (*Verbascum thapsus*)– supports the respiratory system
- Nettles (*Urtica dioica*)—source of antihistamine; allergies, tonic
- Passionvine (*Passiflora incarnata*)—sedative, calming
- Plantain (*Plantago* spp.)—anti-inflammatory and wound healing
- Prickly Ash (*Zanthoxylum clava-herculis*)—mouthwash; circulation stimulant
- Red Clover (*Trifolum pretense*)—estrogenic; relieves menopausal symptoms
- St. Johnswort (*Hypericum punctatum*)—supports the nervous system; antiviral
- Skullcap (*Scutellaria lateriflora*)—sedative, calming
- Sweet Annie (*Artemisia annua*)—anti-inflammatory, antioxidant, antiviral, antimicrobial
- Wild Lettuce (*Lactuca canadensis*)—pain relieving, sedative
- Wild Rose (*Rosa* spp.)—uplifting, cooling and refreshing
- Yaupon (*Ilex vomitoria*)—stimulating, caffeinated tea herb
- Yellow Dock root (*Rumex crispus*)—laxative, cleansing
- Yellowroot (*Xanthorhiza simplicissima*)—astringent, anti-microbial, anti-inflammatory

(Bone, K., 2003, Hobbs, 2016, Hoffman, 2003, Romm, A. 2000, Soliman, M., 2024).

Glossary of Herbal Actions

Adaptogens—have a balancing effect on the hypothalamus-pituitary-adrenal axis. They help the body adapt to stresses:
eleuthero (*Eleutherococcus senticosus*), ashwagandha (*Withania somnifera*), nettles (*Urtica dioica*)

Alterative—formerly known as blood purifiers, alteratives restore proper bodily functions:
dandelion (*Taraxacum officinale*), echnicea (*Echinacea purpurea*), eleuthero (*Eleutherococcus senticosus*), yellow dock (*Rumex crispus*), nettles (*Urtica dioica*)

Analgesic—pain-relieving substance:
black willow (*Salix nigra*), feverfew (*Tanacetum parthenium*), wild lettuce (*Lactuca* spp.)

Antacid—reduces stomach acid:
Meadowsweet (*Filipendula ulmaria*)

Antibacterial—inhibits or destroys bacteria:
baikal skullcap (*Scutellaria baicalensis*), elecampane (*Inula helenium*), goldenseal (*Hydrastis canadensis*)

Anticatarrhal—helps to remove excess mucus:
elder flower (*Sambucus canadensis*), goldenrod (*Solidago* spp.), mullein (*Verbascum Thapsus*)

Antidepressant—prevents or relieves depression:
St. Johnswort (*Hypericum punctatum*), lemon balm (*Melissa officinalis*), mimosa (*Abizia julibrissin*), wild rose petals (*Rosa* spp.)

Antifungal—inhibits growth or destroys fungi:
calendula (*Calendula officinalis*), thyme (*Thymus vulgaris*), yellowroot (*Xanthorhiza simplicissima*)

Antihistamine—inhibits or prevents histamine, a chemical that contributes to allergic responses:
chamomile (*Matricaria recutita*), nettles (*Urtica dioica*), sweet Annie (*Artemisia annua*)

Anti-inflammatory—reduces the inflammation response:
ashwagandha (*Withania somnifera*), baikal skullcap (*Scutellaria baicalensis*), calendula (*Calendula officinalis*), feverfew (*Tanacetum parthenium*), goldenrod (*Solidago* spp.), meadowsweet (*Filipendula ulmaria*), yarrow (*Achillea millefolium*)

Antimicrobial—resists or destroys pathogenic microorganisms:
calendula (*Calendula officinalis*), horsemint (*Monarda punctata*), peppermint (*Mentha piperita*), yarrow (*Achillea millefolium*), sweet Annie (*Artemisia annua*)

Antiseptic—inhibits the growth of infectious organisms:
horsemint (*Monarda punctata*), yellowroot (*Xanthorhiza simplicissima*)

Antispasmodic—prevents spasms in smooth or skeletal muscle:
black haw (*Viburnum prunifolium*), chamomile (*Matricaria recutita*), lemon balm (*Melissa officinalis*), motherwort (*Leonurus cardiaca*), passionvine (*Passiflora incarnata*), mad-dog skullcap (*Scutellaria lateriflora*)

Antitussive—suppresses the cough reflex:
wild black cherry (*Prunus serotina*)

Antiviral—prevents and treats the spread of viral infections:
lemon balm (*Melissa officinalis*), St. Johnswort (*Hypericum punctatum*), sweet Annie (*Artemisia annua*)

Astringent—contraction of body tissues, drying, helps control bleeding:

yarrow (*Achillea millefolium*), plantain (*Plantago* spp.), nettle (*Urtica dioica*), yellowroot (*Xanthorhiza simplicissima*)

Carminative—aids with the digestive system; helps to expel flatulence:
chamomile (*Matricaria recutita*), peppermint (*Mentha piperita*)

Circulation Stimulant—increases blood flow through the body and to peripherals:
Prickly ash (*Zanthoxylum clava-herculis*), waxmyrtle (*Morella cerifera*)

Demulcent—mucilaginous substance that helps soothes mucous membranes:
mullein (*Verbasum thapsus*), chickweed (*Stellaria media*), blue violet (*Viola sororia*)

Diaphoretic—promotes perspiration:
elder flower (*Sambucus canadensis*), chamomile (*Matricaria recutita*), elecampane (*Inula helenium*), goldenrod (*Solidago* spp.), lemon balm (*Melissa officinalis*), peppermint (*Mentha piperita*), prickly ash (*Zanthoxylum clava-herculis*), yarrow (*Achillea millefolium*), boneset (*Eupatorium perfoliatum*)

Diuretic—promotes urination:
cleavers (*Galium aparine*), dandelion (*Taraxacum officinale*), hibiscus roselle (*Hibiscus sabdariffa*), nettle (*Urtica dioica*)

Expectorant—helps clear mucus from the lungs:
elecampane (*Inula helenium*), gumweed (*Grindelia* spp.), licorice (*Glycyrrhiza glabra*), mullein (*Verbascum thapsus*), horsemint (*Monarda punctata*), white horehound (*Marrubium vulgare*)

Febrifuge—reduces fever:

elder flower (*Sambucus canadensis*), feverfew (*Tanacetum parthenium*), yarrow (*Achillea millfolium*), boneset (*Eupatorium perfoliatum*)

Hypotensive—substances that lower blood pressure:
hawthorn (*Crataegus* spp.), hibiscus roselle (*Hibiscus sabdariffa*)

Immune-Enhancing—enhances the activity of the immune system:
astragalus (*Astragalus membranaceus*), echinacea (*Echinacea purpurea*), elderberry (*Sambucus canadensis*)

Kidney and Bladder Health—helps to prevent kidney stones and UTIs:
chanca piedra, crushing stone (*Phyllanthus niruri*)

Laxative—stimulates bowel movement:
burdock (*Arctium minus*), yellow dock (*Rumex crispus*), dandelion (*Taraxacum officinale*)

Toothache—pain from abscess, gum infections:
prickly ash (*Zanthoxylum clava-herculis*)

Nervine—herbs that have a beneficial effect on the nervous system:
chamomile (*Matricaria recutita*), bacopa (*Bacopa monnieri*), motherwort (*Leonurus cardiaca*), mad-dog skullcap (*Scutellaria lateriflora*), St. Johnswort (*Hypericum punctatum*)

Sedative—soothing to the nervous system; helps relieve nervousness and stress:
lemon balm (*Melissa officinalis),* bacopa (*Bacopa monnieri*), California poppy (*Eschscholzia californica*), chamomile (*Matricaria recutita*), black haw (*Viburnum prunifolium*), hops (*Humulus lupulus*)

Stimulant—an herb that increases the function of an organ or system:
Yaupon (*Ilex vomitoria*);

Vulnerary—wound healer:
plantain (*Plantago* spp.), yarrow (*Achillea millefolium*), blue violet (*Viola sororia*), calendula (*Calendula officinalis*), St. Johnswort (*Hypericum punctatum*)

RESOURCES/REFERENCES

Ajmera, R., (2021). “Does white mulberry have health benefits?” Nutrition. Retrieved from https://www.healthline.com/nutrition/white-mulberry.

Allotment Garden. Retrieved from https://www.allotment-garden.org/composts-fertilisers/biochar-terra-preta/how-to-make-biochar-at-home/.

Austin, T. (2021). “Southern prickly-ash.” Edisto Island Open Land Trust. Retrieved from https://edisto.org/southern-prickly-ash/#:~:text=The%20flesh%20of%20Southern%20Prickly,a%20local%20anesthetic%20in%20humans.

Begum, J. (2024). “Health benefits of lion’s mane mushrooms.” WebMD. Retrieved from https://www.webmd.com/diet/what-are-the-health-benefits-of-lions-mane-mushrooms.

Bermejo et al., (2005). “Acetogenin.” Retrieved from https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/acetogenin.

Bobrow, W. (2015). *Bitter & shrub syrup cocktails*. Beverly, MA: Fair Winds Press.

Bone, K. (2003). *A common guide to blending liquid herbs: Herbal formulations for the individual patient.* St. Louis, MO: Churchill Livingstone, An Imprint of Elsevier.

Brown, D. (April 22, 2016). “Growing vegetable gardens near black walnut trees.” Michigan State University. Retrieved from https://www.canr.msu.edu/news/growing_vegetable_gardens_near_black_walnut_trees.

Buhner, S. H. (2015). *Healing lyme: Natural healing of lyme borreliosis and the coinfections chlamydia and spotted fever rickettsiosis*, 2nd edition. New York, NY: Raven Press.

Center Staff. (2025). “How to collect and store seeds.” Lady Bird Johnson Wildflower Center. Retrieved from https://www.wildflower.org/learn/collect-store-seeds.

Cornell Small Farms. (2022). “Outdoor Production.” Retrieved from https://smallfarms.cornell.edu/projects/mushrooms/outdoor-production/.Couplan, F. (1998). *The encyclopedia of edible plants of North America: Nature’s green feast.* New Canaan, CTl: Keats Publishing.

de la Forêt, R. and Han E. (2020). *Wild remedies: How to forage healing foods and craft your own herbal medicine.* Carlsbad, CA: Hay House, Inc.

Deane, G. (1997). “Groundnuts: Anti-cancer treat.” Eat The Weeds and other things, too. Retrieved from https://www.eattheweeds.com/groundnuts-anti-cancer-treat/.

Duke, J. A. (1992). *Handbook of edible weeds*. Boca Raton, FL: CRC Press.

Duke, J. A. (2007). *Herb-A-Day*… Virginia Beach, VA: Eco Images.

Duke, J. A. (1997). *The Green Pharmacy.* Rodale Press, Emmaus, PA.

Elufioye, T. O., Habtemariam, S. Adejare, A. (2020). “Chemistry and pharmacology of alkylamides from natural origin.” Retrieved from https://pubmed.ncbi.nlm.nih.gov/33071385/#:~:text=In%20general%2C%20alkylamides%20have%20been,%2C%20antidiabetic%2C%20and%20antiprotozoal%20activities.

Epps, M. L. (October 9, 2019). “Pawpaws and the zebra swallowtail butterfly.” Retrieved from https://vnps.org/paw-paws-and-the-zebra-swallowtail-butterfly/.

Erichsen-Brown, C. (1979). *Medicinal and other uses of North American plants: A historical survey with special reference to the Eastern Indian*

tribes. Toronto, Ontario: General Publishing Co., Ltd.

Exploring Nature's Connections. (2017). "Northern Prickly-ash." The Natural Web. Retrieved from https://the-natural-web.org/2017/02/18/northern-prickly-ash/.

Forager, J. (2022). "Common reed (Phragmites), an age old sweet treat." Eat the Planet. Retrieved from https://eattheplanet.org/common-reed-phragmites-an-age-old-sweet-treat/.

Foster, S. and Duke, J. A. (2003). *Eastern/Central medicinal plants and herbs*. New York: Houghton Mifflin Co.

Freedman, A. (2021). *Terpenes for well-being: A comprehensive guide to botanical aromas for emotional and physical self-care*. Coral Gables, FL: Mango Publishing Group.

Frey, D. and Czolba, M. (2017). *The food forest handbook: Design and manage a home-scale perennial polyculture garden*. Gabriola Island, BC Canada: New Society Publishers.

Grimm, W. C. (1962). The book of trees: Text and illustrations. New York: Hawthorn Publishers.

Hampton, J. (March 2, 2024). *Muck Soil: Definition and uses*. Retrieved from https://hellogravel.com/posts/muck-soil-definition-and-uses/?srsltid=AfmBOorDSIbqtsgNACtfBpU-SPA20e9D7pC9zQh-lXQIfKeYvgZpo5Ns.

Harlow, W. M. and Harrar, E. S. (1969). *Textbook of Dendrology*. New York: McGraw-Hill Book Company.

Hemenway, T. (2009). *Gaia's garden: A guide to home-scale permaculture* (Second edition). White River Junction, VT: Chelsea Green Publishing.

Henderson, R. K. (2000). *The neighborhood forager*. White River Junction, VT: Chelsea Green Publishing Company.

Hobbs, C. (2016). "Herbal action categories." Retrieved from https://media.christopherhobbs.com/wp-content/uploads/2023/02/12133022/Herbal-Actio

ns.pdf.

Hoffman, D. (2003). *Medical herbalism: The science and practice of herbal medicine.* Rochester, VT: Healing Arts Press.

Howard, D. G. Retrieved from https://www.almanac.com/video/types-soil-garden.

Huang, B., Wu, Y., Li, C., Tang, Q., Zhang, Y. (2023). "Molecular basis and mechanism of action of *Albizia julibrissin* in depression treatment and clinical application of its formulae." National Library of Medicine. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/.

Hudson, C. (1976). *The southeastern Indians.* Knoxville, TN: University of Tennessee Press.

Hudson, C. (1979). *Black Drink: A Native American Tea*. Athens, GA: The University of Georgia Press.

Irving, J. A., Dobkin, P. L., & Park, J. (2009). "Cultivating mindfulness in health care professionals: A review of empirical studies of mindfulness-based stress reduction (MBSR)." *Complementary Therapies in Clinical Practice*, 15, 61-66.

Joshi, V., Akanksha, S, Ajay, J., Amber, V, and Neelu, J. "Plant cardennolides: Multifunctional medicinal agents." Retrieved from https://www.benthamkscience.com/chapter/19784.

Jravirginia. (2021). "Native, non-native, invasive—and dandelions." James River Association. Retrieved from https://thejamesriver.org/native-non-native-invasive-and-dandelions/#:~:text=Dandelions%20(Taxacum%20officinale)%20are%20native,Mayflower%20for%20its%20medicinal%20uses.

Julson, E. (2024). "9 health bnefits of lion's mane mushroom (plus side efects)." Healthline Medical Network. Retrieved from https://www.healthline.com/nutrition/lions-mane-mushroom.

Kimmerer, R. W. (2023). *Braiding Sweetgrass.* Minneapolis, MN: Milkweed Editions.

Kubala, J. (2023). “Top 7 health and nutrition benefits of persimmon.” Retrieved from https://www.healthline.com/nutrition/persimmon-nutrition-benefits.

Kuhn, M. A. & Winston, D. (2008). *Herbal therapy & supplements: A scientific and traditional approach.* Philadelphia, PA: Lippincott & Williams & Wilkins.

Lane, B. (2025). “Gardening: A balancing act.” CNU 26th Annual Gardening Symposium.

Locke, A. (2021). *The forager’s garden: Grow an edible sanctuary in your own backyard.* Hampshire, United Kingdom: Permanent Publications.

Ludden, C. (2022). “A most gracious host.” Around the Grounds, Native Plants. Retrieved from https://naturecentergb.org/2022/04/21/a-most-gracious-host/.

MasterClass. (Nov 17, 2021). *Alkaline soil explained: How to identify and fix alkaline soil*. Retrieved from https://www.masterclass.com/articles/alkaline-soil.

Memorial Sloan Kettering Cancer Center. (2022). “Sheep sorrel.” Retrieved from https://www.mskcc.org/pdf/cancer-care/patient-education/herbs/sheep-sorrel?mode=large.

Midura, R. “Prickly ash: Herb of the week.” Commonwealth Holistic Herbalism. Retrieved from https://commonwealthherbs.com/prickly-ash-herb-of-the-week/.

Minnesota Department of Agriculture. (2025). “Japanese honeysuckle.” Retrieved from https://www.mda.state.mn.us/japanese-honeysuckle.

Missouri Prairie Foundation. “Natives, cultivars, and nativars.” Grow Native. Retrieved from https://grownative.org/learn/natives-cultivars-and-n

ativars/#:~:text=Nativar%3A%20A%20cultivar%20derived%20from,processes%20rather%20than%20human%20intervention.

Missouri Prairie Foundation. “Wild plum: *Prunus americana*.” Grow Native. Retrieved from https://grownative.org/native_plants/wild-plum/.

Monarch Joint Venture. (2025). “Why Milkweed?” Monarch Joint Venture. Retrieved from https://monarchjointventure.org/monarch-biology/why-milkweed.

Morini, R. (January 2018-Vol. 4 No. 1). *Backyard composting with practical tips from the pros*. Retrieved from https://piedmontmastergardeners.org/article/backyard-composting-with-practical-tips-from-the-pros/.

NC State Extension. “*Castanea pumila*.” North Carolina Extension Gardener Plant Toolbox. Retrieved from https://plants.ces.ncsu.edu/plants/castanea-pumila/.

National Agricultural Library (USDA), “Laws and Regulations of Invasive Species,” www.invasivespecoiesinfo.gov/laws/execorder.shtml.

Native Plant Trust. (2025). “*Pycnanthemum muticum*—broad-leaved mountain-mint, clustered mountain-mint.” *Go Botany*. Retrieved from https: http://gobotany.nativeplanttrust.org/species/pycnanthemum/muticum/.

North Carolina Extension Gardener Plant Toolbox. “*Aralia spinosa*.” Retrieved from https://plants.ces.ncsu.edu/plants/aralia-spinosa/.

Nyerges, C. (1997). “The fungus among us: Exploring the fascinating world of mushrooms.” Virginia Beach, VA: Eco Images.

Pawpaws, flies, and Jurassic pollinators. “Pollinator Gardens.” June 4, 2020. Retrieved from https://www.blog.pollinatorgardens.net/2020/06/pawpaws-flies-and-jurassic-pollinators.html.

PeaceHealth. (2025). “Prickly Ash.” Healthwise. Retrieved from https://www.peacehealth.org/medical-topics/id/hn-2149006#:~:text=Prickly%20ash%

20bark%20contains%20alkaloids,of%20prickly%20ash%20for%20toothaches.

Pengelly, A. (1996). *The constituents of medicinal plants: An introduction to the chemistry and therapeutics of herbal medicine.* Cambridge, MA: CABI Publishing.

Pitchford, P. (2002). *Healing with whole foods: Asian traditions and modern nutrition*. Berkeley, CA: North Atlantic Books.

Plant Database. Lady Bird Johnson Wildflower Center. Retrieved from https://www.wildflower.org/plants/result.php?id_plant=JUNI.

Plant Delights Nursery, Inc. Retrieved from https://www.plantdelights.com/collections/pycnanthemum#:~:text=Pycnanthemum%20sap%20is%20a%20natural,like%20to%20eat%20mountain%20mint.

Plant HR Natives. *Native plants for southeast Virginia: including Hampton roads region. Virginia Coastal Zone Management Program.*

Plant HR Natives. "Landscaping in Rain Gardens." Retrieved from https://www.plantvirginianatives.org/raingardens.

Polito, J. T. and Lange, B. M. (2023). "Terpene." Science Direct. Retrieved from https://www.sciencedirect.com/topics/chemistry/terpene.

Pyle, A. *Understanding Soil pH/A key to plant health*. Earth Science. Retrieved from https://www.earthsciencegrowing.com/expert-advice/understanding-soil-ph-a-key-to-plant-health/.

Romm, A. (2000). "Therapeutic actions of herbs." Medicines from the Earth herb conference.

Rosenbaum, J. (2023). *Wild plant culture: A guide to restoring edible and medicinal native plant communities.* Gabriola Island, BC: New Society Publishers.

Santos-Longhurst, A. (July 12, 2023). "Why is oxytocin known as the 'love hormone'? And 11 other FAQs." Retrieved from https://www.healthline.co

m/health/love-hormone.

Scott, Timothy Lee. (2010). Invasive Plant Medicine: The Ecological Benefits and Healing Abilities of Invasives (p. 36). Inner Traditions/Bear & Company. Kindle Edition.

Science Learning Hub. (2022). Seed Dispersal. Retrieved https://www.sciencelearn.org.nz/resources/103-seed-dispersal.

Shane, C. P. (2015). “Time for bark harvest.” Blue Ridge School of Herbal Medicine. Retrieved from https://blueridgeschool.org/time-for-bark-harvest/.

Shernoff, L. (2003). “Hen of the Woods.” Virginia Beach, VA: Eco Images.

Shutes, J. (2025). “Emotional well-being & the scent of soil.” The School for Aromatic Studies. Retrieved from https://aromaticstudies.com/emotional-well-being-the-scent-of-soil/.

Soliman, M. (2024). “What is sweet Annie and what are the benefits?” Retrieved from https://www.healthline.com/health/what-is-sweet-annie#other-uses.

Special Feature. (2008). “The health benefits of muscadine grapes, wines and nutraceuticals.” Special Carolinas Edition, Eastern North Carolina & South Carolina Edition. Retrieved from https://cypressbendvineyards.com/media/1269/md-news-june-2008.pdf.

Stamets, P. (2005). *Mycelium running: How mushrooms can help save the world*. Berkeley, CA: Ten Speed Press.

Sun, K. “Nitrogen-fixing plants to enrich your soil.” Gardenia Creating Gardens. Retrieved from https://www.gardenia.net/guide/nitrogen-fixing-plants-to-enrich-soil.

Sweetser, R. (2022). “Using weeds to read the soil.” Almanac. Retrieved from https://www.almanac.com/what-weeds-tell-you-about-your-soil.

Tallamy, D. (2007). *Bringing nature home: How native plants sustain wildlife in our gardens*. Portland, OR: Timber Press.

The Natural Web: Exploring Nature's Connections. (2017). "Northern Prickly-ash." Retrieved from https://the-natural-web.org/2017/02/.

Virginia Department of Forestry. "Rain gardens: A landscape tool to improve water quality." Retrieved from www.dof.virginia.gov.

University of Minnesota. (2025). "Japanese honeysuckle." Retrieved from https://www.mda.state.mn.us/japanese-honeysuckle.

Vital Plan. "Japanese knotweed (with resveratrol)." Retrieved from https://vitalplan.com/blogs/ingredients/japanese-knotweed.

Vogel, V. (1970). *American Indian medicine*. Norman and London: University of Oklahoma Press.

Volk, G. and Byrne, P. "Crop wild relatives and their use in plant breeding." The USDA Plant Introduction Program. Retrieved from https://colostate.pressbooks.pub/cropwildrelatives/chapter/usda-plant-introduction-program/.

Vollmer, S. (2008). "US: Pesticide data may tell why bees die," *News Observer*, August 22, 2008.

Watt, B. K., Merrill, A. L. (1975). *Handbook of the nutritional contents of foods*.New York, NY: Dover Publications.

Weakley, A., Ludwig, J. C., and Townsend, J. 2012. Flora of Virginia. Fort Worth, TX: BRIT Press.

Wood, M. (2009). *The Earthwise Herbal, Volume 1: A Complete Guide to Old World Medicinal Plants*. Berkeley CA: North Atlantic Books.

Young, B. "Joe Pye Weed . . . towering, floriferous, bee magnet." The Big Little Garden. Retrieved from https://www.thebiglittlegarden.com/joe-pye-weed.

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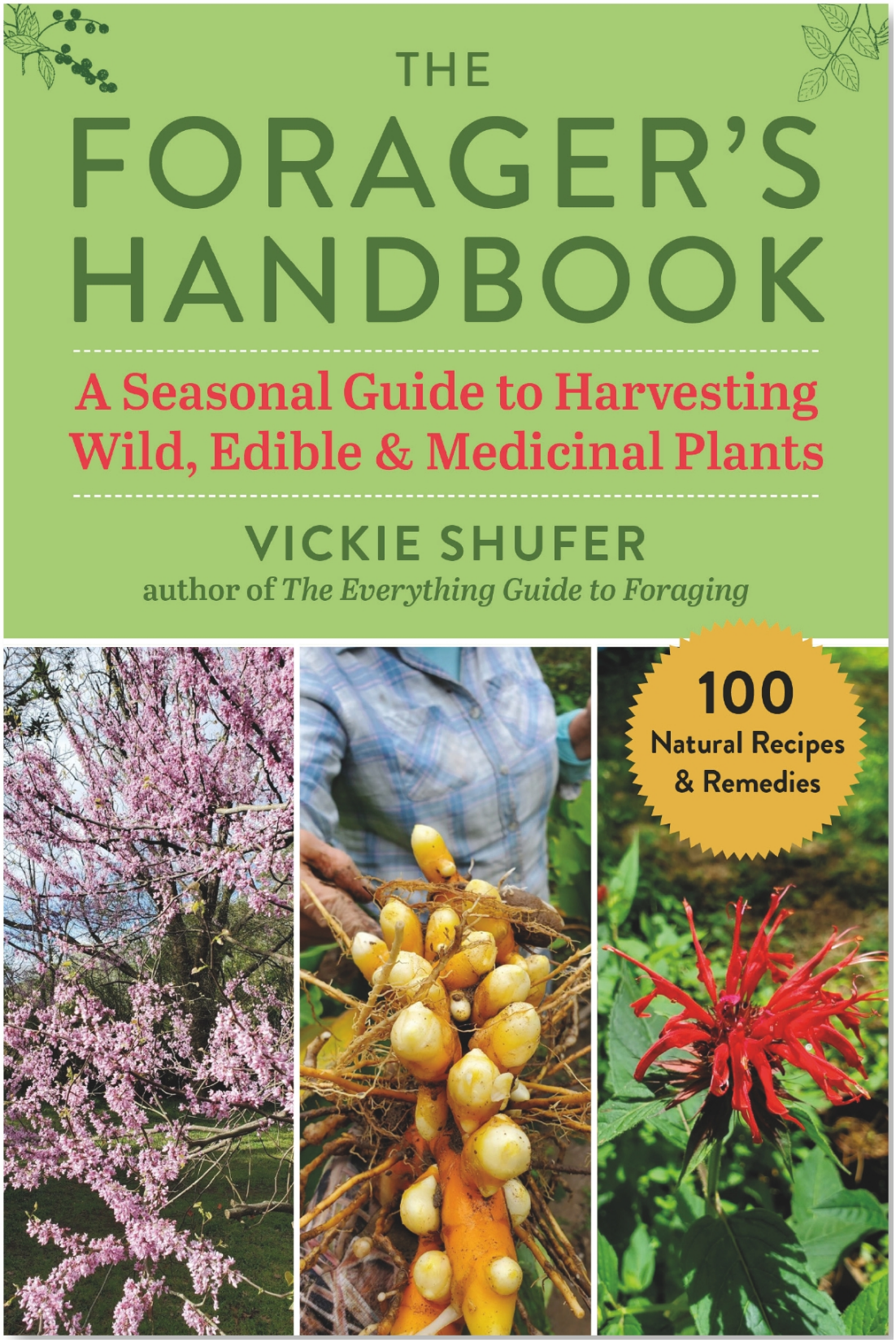

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